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# On the Epistemology and Methodology of Management and Organizations: a General Semantics Approach With an Analysis of Academic Opinion.

Walter Jackson Duncan

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ON THE EPISTEMOLOGY AND METHODOLOGY OF  
MANAGEMENT AND ORGANIZATIONS: A GENERAL  
SEMANTICS APPROACH WITH AN ANALYSIS OF  
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**Louisiana State University and Agricultural and  
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ON THE EPISTEMOLOGY AND METHODOLOGY  
OF MANAGEMENT AND ORGANIZATIONS:  
A GENERAL SEMANTICS APPROACH  
WITH AN ANALYSIS OF  
ACADEMIC OPINION

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The Department of Management and Marketing

by  
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B.S., Samford University, 1965  
M.B.A., Louisiana State University, 1966  
January, 1969

## PREFACE

The number of persons who have provided assistance throughout this study are so numerous that specific mention of each is impossible. Therefore, the following acknowledgements are restricted to those who have been unusually helpful and encouraging.

A special debt of gratitude is owed to Dr. Raymond V. Lesikar, whose sincere interest, timely comments and helpful suggestions made this project a personally challenging and rewarding experience. Appreciation is also extended to Dr. Herbert G. Hicks and Dr. Edmund R. Gray for their time in reviewing the manuscript and their many helpful recommendations.

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The contribution of fellow graduate students is impossible to measure. However, a particular note of thanks is offered to Mrs. Sam Bruno (Joan) for her assistance in processing the data.

For making graduate study financially feasible, the writer is indebted to the Louisiana State University and the



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And finally to my wife Judy, to whom I am indebted most of all, a sincere note of appreciation is offered. To attempt to measure her contribution to the completion of this study would be useless for not only did she type and edit the entire manuscript but most of all she provided unending patience and encouragement when they were needed most.

In conclusion, because of a recognition of the somewhat unfamiliar nature of this topic and in answer to questions raised by various individuals, a brief explanation is offered as to what motivated the author's interest in such a study. It may be said that the writer's interest in methodology was the outgrowth of studies in the related fields of economic theory and general semantics. From the economists an appreciation of the virtues of methodological discussion was obtained and from the general semantists a means of analyzing and conducting such discussions was discovered. This study, growing from personal interests in related fields, is an attempt to apply to management and organizations certain fundamental issues relating to the methods of social science.

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## ABSTRACT

Little attention has been directed toward the methodological problems of management and organization theory. It is likely that this neglect has resulted more from the scientific immaturity of the discipline than from academic unconcern. However, the sophistication of the subject has advanced to the point where immaturity is no longer a valid excuse. As a result, this study is an attempt to examine selected methodological issues with the objective of gaining some insight into the future of management science.

Initially, the opposing epistemological perspectives of empiricism and rationalism were analyzed through the use of secondary research. Utilizing the tenets of general semantics, it was argued that neither perspective by itself is capable of providing the answers that management and organization theorists seek. Only an elaborate deductive-inductive system making use of man-to-man understanding can provide such information.

Consideration was also given to the value-centric predicament faced by all the social sciences. Emphasis was placed on the necessity of explicit separation of judgments of value from statements of scientific fact. This proposition was advanced because of the abstract nature of value judgments which

disqualifies them from entry into the confines of science.

In the final chapter an attempt was made to empirically determine why research in the area of management exhibits such a diversity of methodological approaches. It was hypothesized that past and present environmental influences of the researcher account for these diversities. In an effort to test this proposition, a mail questionnaire was sent to 380 management professors in 255 colleges and universities throughout the United States.

It was determined, on the basis of the sample information, that geographical factors constitute the primary influences upon methodological convictions. Factors such as the area where the respondent's highest degree was received, area where he was reared and place of present residence seemed to be especially important. On the other hand, factors such as age, teaching experience and religious preference appeared relatively unimportant in determining differences in methodological beliefs.

One particularly interesting result was noted relative to the epistemological perspective of management academia. In general, differences of opinion with respect to epistemological issues were deviations of magnitude, not direction. In other words, on the average, the respondents exhibited a uniform favorable connotation relative to empiricism.

On the subject of a positive as opposed to a normative approach to management and organizations, agreement was not so evident. Although no groups thought of either approach as entirely satisfactory in and of itself, there were obvious differences relative to the single most preferred alternative.

The implications of these findings to the future of management and organization theory are considerable. If one accepts the notion of self-projection, he would likely agree that today's academia, through their research and teaching, will influence the theoretical labors of tomorrow's scholars. Therefore, management research in the future will probably continue to exhibit a great deal of empirical content.

With respect to the value-centric predicament, projections are more difficult to make. The fact that some groups favored one approach and others favored another complicates the problem considerably. In view of this, methodological controversy seems sure to continue in this area. Although academic controversy is refreshing, it can also be destructive unless it is based on systematic analysis. For this reason, it is hoped that the future will witness more interest in methodology than has the past.

## CHAPTER I

### INTRODUCTION: REFLECTIONS ON SCIENTIFIC, PHILOSOPHICAL AND PRACTICAL CONSIDERATIONS

If any problem in the social sciences is important enough to study, it should be studied with methods that will yield accurate and unbiased results.

--Rensis Likert

It is with some degree of anticipation that a student of management enters the domain of philosophy to seek to interrelate the two areas so that both may be better understood. This anticipation is, to some extent, the result of the "paradox of methodological investigation"<sup>1</sup> which is no less apparent in management than in any other discipline. If there is apprehension, however, it is overshadowed by a sense of challenge when one recognizes that the only route to understanding the substantive problems of any subject area is by way of an examination of the philosophical issues that provide the foundation for all knowledge. Undoubtedly,

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<sup>1</sup>The "paradox of methodological investigation" exists because philosophers trained in methodology rarely possess a knowledge of management and managers generally lack the training necessary to philosophically examine their methods. See Sherman R. Krupp, editor, The Structure of Economic Science: Essays on Methodology, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1966, p. iii.

every student, either consciously or unconsciously, seeks the answer to such questions; but when he formally examines this area, a unique vocabulary must be mastered before much progress can be made.

### Definition of Terms

Throughout the study an effort will be made to define any unfamiliar term at its point of usage. Some terms, however, are so basic to an understanding of the subject that they warrant special attention. The remainder of this section is devoted to the clarification of such words and phrases.

### Philosophy

Philosophy, as it relates to an area of academic inquiry, involves an attunement with the ultimate nature of things--a speculative enterprise which penetrates for no practical purpose the structure of ultimate reality.<sup>2</sup> In this context it assumes its literal meaning "love for knowledge." So defined, philosophy is the summation of at least four sub-areas of inquiry.

---

<sup>2</sup>William Litzinger and Thomas E. Schaefer, "Perspective: Management Philosophy Engima," Academy of Management Journal, Vol. IX, No. 4 (Dec., 1966), pp. 340-341.

<sup>3</sup>This particular scheme was obtained from J. Donald Butler, Four Philosophies and Their Practice in Education and Religion, Revised ed., Harper and Row Publishers, New York, 1957, various pages.

Figure 1 offers an illustration of how these academic sub-cultures combine to develop a general field of study. Moving clockwise from the top, one first encounters metaphysics or the theory of reality, which concerns itself with the cosmos and the nature of causality. Next is axiology, the general theory of value, which examines the summum bonum or "highest good" and naturally incorporates ethics and aesthetics. At the base of the diagram is epistemology, which relates to the theory of knowledge and is associated with questions regarding the possibility of knowledge, the kinds of knowledge and the instruments of knowledge. The final subclassification in this particular scheme is logic and is perhaps the most familiar of all the categories mentioned. Logic is the science of exact thought and as such includes methodology which is related to epistemology via its concern with valid knowledge. This then is a brief description of philosophy in its "purely classical" sense.

The preceding definition was formulated in an age of idealism when knowledge for the sake of knowledge was of paramount importance. In the present age of pragmatism or American vocationalism, it is not surprising that some writers have taken issue, either implicitly or explicitly,



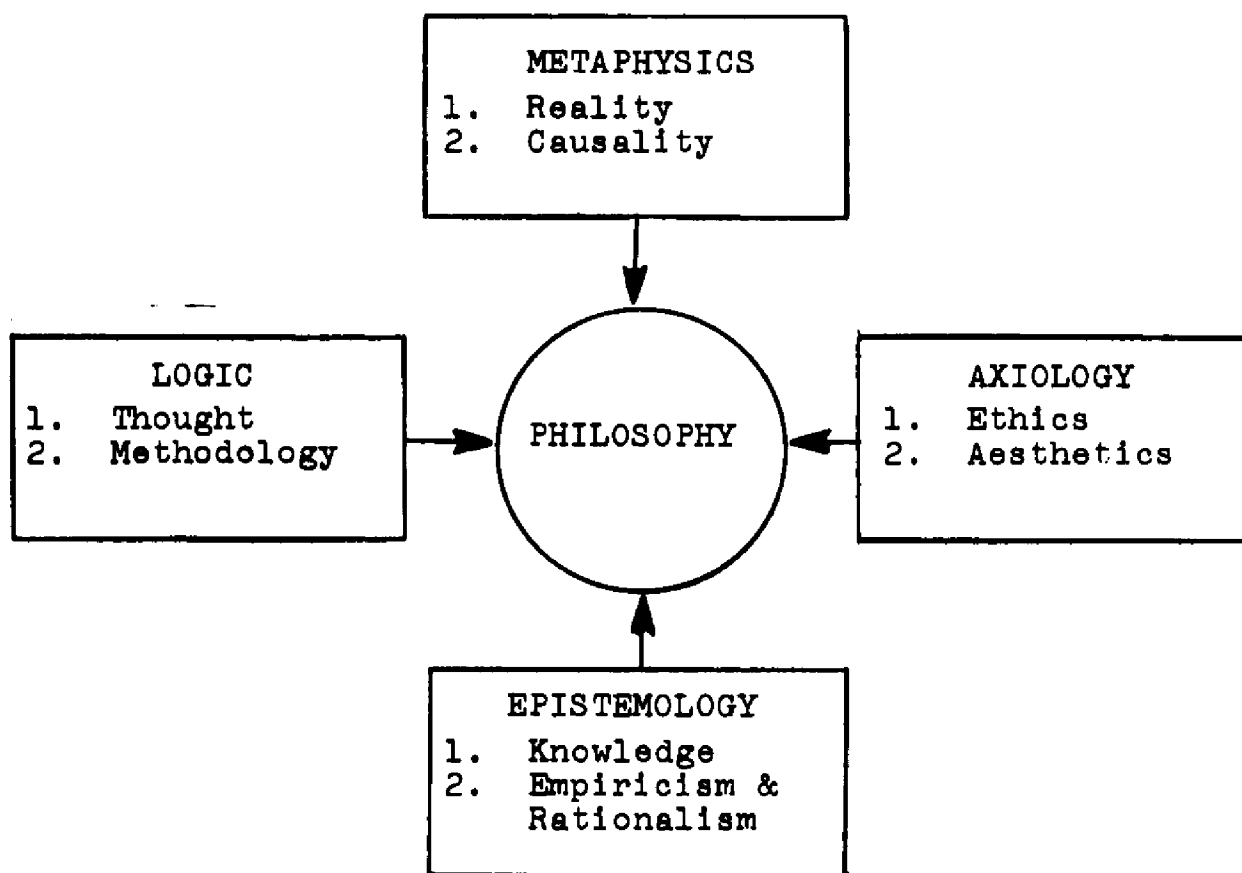


FIGURE I  
THE SUBCULTURES OF PHILOSOPHY

with the traditional meaning of the term.<sup>4</sup> Today, "philosophy" seems to describe the highest type of practical knowledge, the knowledge to order other knowledge for human purpose.<sup>5</sup> According to this interpretation, a philosophy of management must be a philosophy of business that will provide the techniques and value guidelines necessary for "effective" and lawful managerial action. Such a proposition raises doubt as to any relationship between the modern and traditional usage of the term. In fact, the pragmatic definition seems to be more closely related to science, ethics and jurisprudence than to classical philosophy thus creating a serious semantic confusion and raising the necessity for additional definitions.

### Science

The objective of science is to describe, explain and predict. The first of these aims is basic and indispensable while the second and third are the most fruitful results of

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<sup>4</sup>For example, R. C. Davis, "Philosophy of Management," Advanced Management, Vol. XXXIV, No. 4 (April, 1959), pp. 5-6 and Oliver Sheldon, The Philosophy of Management, Prentice-Hall, Inc., 1923, pp. 27-30.

<sup>5</sup>Litzinger and Schaefer, loc. cit.

scientific labor.<sup>6</sup> Description is common to both philosophy and science; only the plane upon which this description takes place is different. The objective of description in science is prediction; but scientific prediction has no counterpart in pure philosophy. The "scientific mentality" is the propensity to suspend belief until evidence of the appropriate kind is produced and believed only to the degree warranted by available evidence without excluding the possibility of future disconfirmation.<sup>7</sup> The "philosophic mentality" on the other hand, seeks the cosmic nature of a perceived event and structures it within the philosophical framework one possesses. Therefore, philosophy and science are not and can never be the same. Management science has made significant progress in recent years, but the discipline seems no closer to developing a "true philosophy" than it was fifty years ago.

It is not unreasonable to speculate that at least one cause of the present state of retarded management philosophy is the confusion between the functions of philosophy and

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<sup>6</sup>Herbert Feigl, "The Scientific Outlook: Naturalism and Humanism," in Herbert Feigl and May Brodbeck, editors, Readings in the Philosophy of Science, Appleton-Century-Crofts, Inc., New York, 1953, pp. 10-11. Also see Richard B. Braithwaite, Scientific Explanation, Cambridge University Press, London, 1953, p. 1.

<sup>7</sup>Arthur Pap, An Introduction to the Philosophy of Science, The Free Press of Glencoe, New York, 1962, p. 3.

science. Frederick Taylor himself drew a rather sophisticated distinction between the two by stating that "the mechanism of management must not be mistaken for its essence or underlying philosophy" and concluded with a warning:

The very mechanism which will produce the finest results when made to serve the underlying principles of scientific management will lead to disaster if accompanied by the wrong spirit in those who are using it.<sup>8</sup>

Thus, there is only one sense in which philosophy and science are similar; they both seek knowledge even though it is a fundamentally different type.

### Philosophy of Science

Philosophy of science, as it is viewed today, is a part of analytical philosophy in that it rejects the implicit assumption that the sole task of the philosopher is the supra-scientific description of reality. In fact, it expands the philosopher's traditional task to include the logical analysis of concepts, laws and theories of a given science.<sup>9</sup> Therefore, philosophy of science endeavors to analyze the validity of

---

<sup>8</sup>Frederick W. Taylor, The Principles of Scientific Management, Harper and Brothers Publishers, New York, 1917, pp. 128-129. Here it seems the "mechanism of management" is used synonymously with applied science and is contrasted to philosophy.

<sup>9</sup>May Brodbeck, "The Nature and Function of the Philosophy of Science," in Herbert Feigl and May Brodbeck, Readings in the Philosophy of Science, Appleton-Century-Crofts, Inc., New York, 1953, p. 5.

scientific inquiry and in doing so makes science, like any other activity of man, subject to examination on philosophical grounds.

From this standpoint, philosophy is both the forerunner and successor of science. Scientists are required to accept many concepts such as truth, time and space which they cannot stop to examine; yet, these are the very issues the philosophers seek to explain.<sup>10</sup> Once scientific investigations are initiated, the logic of the methods employed also requires examination; for until their validity is confirmed, any conclusions so obtained remain subject to extreme uncertainty. Thus, methodology is an important and integral part of the philosophy of science.

### Methodology

Methodology is the logic of methods and as such its function is to judge the numerous variations of inductive and deductive systems as to their scientific validity. The objective of this type of inquiry is to standardize or at least define the methods used in order to reduce or isolate that portion of total variation in scientific findings

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<sup>10</sup>Collier's Encyclopedia, P. F. Collier and Son Corporation, New York, 1960, Vol. 15, pp. 312-313.

resulting from "methodological variance." A simple mathematical (i.e. functional) formulation is perhaps the most concise way to illustrate the point.<sup>11</sup> Suppose there exists the following relationship:

$$\delta_o = f(A_o, M, O_p)$$

where,

$\delta_o$  = the data observed

$A_o$  = actual acts of the observee

$M$  = methods of measurement--i.e. methodology

$O_p$  = perception of the observer

If it is possible to isolate and hold constant "methodological variation" ( $\sigma_M$ ), a more direct relationship will exist between  $\delta_o$  and  $A_o$ . Although this would be extremely helpful, an additional source of variance is exposed by this functional formulation that is possibly more troublesome than "pure methodological variation" and might be labeled "perceptual variation" ( $\sigma_{O_p}$ ). Idealistically, one would hope that the sum of methodological and perceptual variation would equal zero ( $\sigma_M + \sigma_{O_p} = 0$ ), but realistically speaking this would be

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<sup>11</sup>The basic idea of a mathematical formulation was obtained from Stuart C. Dodd, "Scient-Scales for Measuring Methodology," The American Behavioral Scientist, Vol. IX, No. 10 (June, 1966), pp. 38 although this formulation bears little resemblance to his treatment of the subject.

highly improbable. If, however, these sources of variation could be minimized so that the relationship between the data observed ( $\delta_o$ ) and the action of the observee ( $A_o$ ) approaches unity, scientific investigation would have surely been accomplished. As will be noted later, this proposition forms the basic purpose of the study--to expose some of the causes of methodological variation and to better understand perceptual variation by making use of the tenets of general semantics and communication theory.

### Purpose of the Study

This study proposes to examine the methodology of management and organizations and to illustrate the contribution that at least one related field of study can make toward the resolution of management's methodological difficulties. The need for such an analysis is evident in the cries of management writers for a systematic theory upon which they may unify their efforts.

### Quest for Management Theory

Many scholars have voiced the need for a theory of management and organizations, but few have made the point with the force of Henri Fayol when he stated "without theory no teaching is possible."<sup>12</sup> If this is true, and to some

---

<sup>12</sup>Henri Fayol, General and Industrial Administration, translated by Constance Storrs, Sir Isaac Pitman and Son, Ltd., London, 1949, pp. 14-15.

extent it must surely be, management faces a tremendous challenge for a true philosophy to provide the necessary condition for a complete and systematically developed science. Such a science cannot be long in coming because no era has ever produced the need nor the urgency for coordinating vast combinations of productive factors as the current period. No greater waste can be imagined than the ineffectiveness of technological discoveries because of the inability to efficiently utilize modern innovations. But management and organization theory cannot solve its methodological problems in a completely esoteric manner. Yet, to think the answers will be supplied from without is equally erroneous. Therefore, methodology presents itself as an interdisciplinary problem and contains all the complications of such a discipline.

#### Toward An Interdisciplinary Approach to Methodology

Methodology is first of all a problem of philosophy, but unlike metaphysics it is readily comprehensible to students of other fields. Management, by its very nature, requires of its students a knowledge of related disciplines that lend themselves quite easily to the examination of methodology. The study at hand will make use of several ideas from general semantics in an effort to analyze and clarify certain methodological difficulties that presently exist in the



study of management and organizations. A further objective of this investigation is to survey the attitudes of management professors with respect to these issues and project what affects, if any, such attitudes will have on the future development of the discipline. In spite of the ambition with which this subject is approached, certain limitations must be conceded.

### Limitations of the Analysis

The first limitation is the scope of the study itself for although answers dealing with the questions of management metaphysics and axiology would be a most significant contribution, such subjects must, by necessity, be left to the philosophers. Therefore, the present study will pursue a less ambitious, although it is hoped equally important, task by limiting its scope to the methodology and epistemology of management and organizations. In addition to this limitation, one other should be noted.

The study at hand is directed toward the more philosophical questions of management and as such faces a constraint relative to universal interest. Managers are doers--they are accustomed to dealing with the realities of the shop and market place and in this capacity are not inclined to

appreciate nor be extremely interested in philosophizing.<sup>13</sup> Their essence is to exist, to decide and to act.<sup>14</sup> They may be compared to the fireman who is too busy fighting the fire to worry about the chemistry of ignition or the physics of his mechanical tools. Therefore, any contribution this study might make will be to academia who must shoulder the joint responsibility of seeking both a philosophy and science of management and organizations.

Comments on Research Design and A  
Preview of the Presentation

The research design used in this study is a combination of secondary and primary research. Chapters one through three make exclusive use of secondary research and provide the foundation for the survey of management professors which constitutes the final chapter. APPENDIX A contains a reproduction of the questionnaire sent to 380 randomly selected management professors at 255 colleges and universities.

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<sup>13</sup>O. A. Ohmann, "Search for a Managerial Philosophy," Harvard Business Review, Vol. XXXV, No. 5 (Sept.-Oct., 1957) p. 41.

<sup>14</sup>George S. Odiorne, "The Management Theory Jungle and the Existential Manager," Academy of Management Journal, Vol. IX, No. 2 (June, 1966), p. 110.

However, since the first three chapters will be developed before the results of the survey are reported, further elaboration on the analytics of the empirical analysis will be postponed until chapter four.

In view of the fact that this study proposes to be a treatise on methodology, it will begin by analyzing in detail two methodological issues common to all social disciplines. Chapter two deals exclusively with the epistemology of management and organization theory. Primary emphasis is given to the alternative epistemological perspectives most evident in the study of management and organizations. Empiricism resulting in a posteriori information is evaluated and contrasted to a priori information as a basis for science. This methodological concept is discussed within the framework of the logic of a universal science of human behavior.

Chapter three relates communication theory to methodology through an examination of the language and semantics of science. In addition, abstraction analysis making use of Korzybski's structural differential is applied to the issue of value judgments in teaching and researching the area of management. The entire analysis is then combined into a discussion of the psychology of self-projection which provides a foundation for the hypotheses to be investigated empirically.

Basically, the idea of self-projection states that environmental factors are influential in the formation of one's system of values and beliefs. This value and belief system in return influences interpersonal communication via man's tendency to assume that his beliefs are typical of all humans. Therefore, in a sense, one always communicates to and about himself. The empirical study will attempt to determine the extent to which various environmental factors influence the formation of methodological convictions. Then, applying the results of the analysis, a speculation as to how contemporary attitudes will affect future management and organization theory through the self-projection of faculty to student will be offered. But, before continuing further, the methodological issues themselves must first be examined and explained.

## CHAPTER II

### EPISTEMOLOGICAL FOUNDATIONS OF MANAGEMENT AND ORGANIZATION THEORY

Human society is not merely a fact or an event in the external world to be studied by an observer like a natural phenomenon. Though it has externality as one of its important components, it is as a whole a little world, a cosmion, illuminated with meaning from within by the human beings who continuously create and bear it as the mode and condition of their self-realization.

--Eric Voegelin

Sciences are concerned with knowledge, and by virtue of this concern, epistemology emerges as the most basic of the scientist's interests. The scientist qua epistemologist concentrates his analysis on the relationship between the perceptual images one constructs and the objective reality to which these images refer.<sup>1</sup> From this it can be seen that epistemological and metaphysical conceptualizations of reality are fundamentally different. Within the theory of knowledge the "ways of knowing" refer to cognitive procedures for substantiating a belief which are justified on the grounds that they are more productive of objective knowledge than any

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<sup>1</sup>William P. McEwen, The Problem of Social-Scientific Knowledge, The Bedminster Press, Totowa, New Jersey, 1963, p. 6.

alternative cognitive procedure.<sup>2</sup> In the field of organizations, individual members and their actions become the "knowable;" science is designated as the process of "knowing" and the causal relationships developed become "knowledge." Through the activity of knowing, the knowable becomes knowledge.<sup>3</sup>

Metaphysics, on the other hand, attempts to explain the nature of reality itself--what it actually is and how it came to be. Thus, the distinction becomes explicit; metaphysics takes cosmic reality as its subject matter, whereas reality relative to perception is the concern of epistemology. Therefore, the primary questions of science are epistemological, not metaphysical, thereby placing upon the present chapter the responsibility of examining the epistemological foundations of organization theory and analyzing the subject matter which it is designed to explain.

Logic of A Universal Science of  
Human Behavior

Perhaps it is too obvious to mention that management and organization theorists have voiced "scientific" concern

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<sup>2</sup>Ibid., p. 63.

<sup>3</sup>James K. Feibleman, "The Scientific Philosophy," Philosophy of Science, Vol. XXVIII, No. 3 (July, 1961), p. 250.

about their subject for decades. Attempts have been made to derive "principles of organization" from Biblical contexts and from the Kameralwissenschaft<sup>4</sup> or Cameralistic science which developed in Germany around the doctrine of administration by the territorial prince. However, voiced concern and constructive action are often completely independent. Recognizing this, the time has come for theorists of organizations to cease their lamentations and take time from their compilation of data and theoretical labors in order that they may reexamine the nature of their subject and the logic of their methods.

Management and organization theory, like any other area of inquiry, assumes the responsibility of formulating generalizations from which consequences may be deducted and predictions made.<sup>5</sup> Needless to say, no single theory thus far developed can boast that it has accomplished such a worthy objective with a high degree of accuracy. Nevertheless, the sum total of all efforts has led the study of organizations far from the reign of the once dominant "rule of thumb." Influential theories have evolved using a variety of approaches and

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<sup>4</sup>Joseph Schumpeter, Economic Doctrine and Method, George Allen and Unwin, Ltd., London, 1954, p. 33.

<sup>5</sup>John G. Kememy, A Philosopher Looks at Science, D. Van Nostrand Company, Princeton, 1959, pp. 247-252.

making necessary complex classification schemes. One such scheme is noted below:<sup>6</sup>

1. Classification according to the sources of data. This category ranges from a purely empirical classification to a completely mystical one. Such a continuum might be called an "epistemological scale."
2. Classification according to the purpose of the researcher. Those theories which propose to describe what actually "is" in organizations occupy one extreme and those attempting to prescribe how organizations "should be" occupy the other.
3. Classification on the basis of the phenomenon studied. Macro theories observing or analyzing organizations in toto are distinguished from micro theories concentrating on the individuals who make up the whole. This continuum might be called a "macro-micro scale."

Since this scheme appears to the writer as the most productive available, it will be used to provide a structure for the analysis of the logic of organization theory. However, the items will be discussed in reverse order beginning with the purpose of a science of management and organizations and an examination of the phenomenon under study.

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<sup>6</sup>Albert Rubenstein and Chadwick J. Haberstroh, editors, Some Theories of Organization, Revised ed., Richard D. Irwin, Inc., Homewood, Ill., 1966, pp. 22-24.



### Purpose of a Science of Management and Organizations

Any science, if it is to worthy of the name, accepts as its basic problem the discovery of invariant elements with respect to environmental conditions and differences in the sensory organization of different persons. Knowledge of such elements permits prediction of the sense phenomena that will most likely appear under a set of given conditions. Therefore, the goal of science is the discovery of universal invariants and principles of covariation.<sup>7</sup> Examples of attempts to accomplish this scientific objective are evident in every stage of the development of management theory. Scientific management and the traditional school found little objection to calling their concepts of covariation "principles"<sup>8</sup> while the advocates of the human relations approach, although less explicit, sought the same type of universal invariants. Other scholars interested in the science of society have made some most interesting observations such as Chase's "33 common patterns of mankind."<sup>9</sup> Thus, science appears as an effort to

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<sup>7</sup>Felix Kaufmann, Methodology of the Social Sciences, The Humanities Press, New York, 1958, p. 8.

<sup>8</sup>Henri Fayol, General and Industrial Management, translated by Constance Storrs, Sir Isaac Pittman and Son, Ltd., London, 1949, pp. 19-40.

<sup>9</sup>Stuart Chase, The Proper Study of Mankind, Revised ed., Harper and Brothers Publishing Co., New York, 1956, pp. 84-93.

add some type of structure to dynamic reality.

Management and organization theory, however, cannot be content with the unrestricted quest for universal invariants since the search must take place according to rigorous rules if the enterprise is to be characterized as scientific. These standards or criteria may best be formulated in terms of ideals to be approximated but perhaps never fully attained. The more important of these are as follows:<sup>10</sup>

1. Intersubjective testability or simple objectivity. Knowledge claims must be subject to examination by the properly equipped individual. Cognitive meanings are sought, not just claims accessible to selected mystics.
2. Reliability of confirmation. Discernment between chance and law is an absolute necessity of science.
3. Coherence and systematic structure. Mere collection of data is not science. A well connected account of facts is the ultimate end of science.
4. Comprehensiveness of knowledge. Science acquires a reach far beyond unaided senses and requires that any unifying hypothesis remain open to revision. The ability to live with an unfinished world is a sign of the maturity of science since the concepts of science are confirmed but never verified.<sup>11</sup>

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<sup>10</sup>Herbert Feigl, "The Scientific Outlook: Naturalism and Humanism," in Herbert Feigl and May Brodbeck, editors, Readings in the Philosophy of Science, Appleton-Century-Crofts, Inc., New York, 1953, pp. 8-20. Also Olaf Helmer and Nicholas Rescher, "On the Epistemology of the Inexact Sciences," Management Science, Vol. VI, No. 1 (Oct., 1959), pp. 25-27.

<sup>11</sup>Robert J. House and Alan C. Filley, "Science, Theory, Philosophy and the Practice of Management," Management International Review, 6 (1966), pp. 97-107.

It is unadvisable to speak of the science of organizations in the same sense as the science of physics. Prediction of events one might expect at a given moment is impossible within the organizational framework where only probabilistic and limited range conclusions are possible.<sup>12</sup> However, as Scott points out, the usefulness of such predictions may be great in the long run even though they provide no real basis for short run decisions.<sup>13</sup> In addition, theories developed with this limited utility may eliminate the practical possibility of certain events and thereby narrow the range of alternatives to be considered. But this is not sufficient for physics. This inconsistency between the socio-behavioral and natural sciences has troubled philosopher and scientist alike for centuries. What unique characteristics exist within the "inexact sciences" and create the "penumbra of uncertainty" that makes them so different from the natural disciplines.

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<sup>12</sup>F. A. Hayek, Degrees of Explanation," British Journal of the Philosophy of Science, Vol. VI, No. 23 (Nov., 1955), p. 255.

<sup>13</sup>William G. Scott, Organization Theory, Richard D. Irwin, Inc., Homewood, Ill., 1967, p. 13.

### On Unique Problems and "Obligations of Faith"

The question has been raised as to whether explanations of social phenomena require a logic different from those of the natural events.<sup>14</sup> Before becoming involved in this controversy, the effects of which will be evident throughout the forthcoming discussion of epistemology, it might be helpful to briefly itemize and illustrate some of the unique problems of management and organizations.

Object of Study. Objection has been raised to Mill's dictum that "men are not, when brought together, converted into another kind of substance." In fact, Roethlisberger has quite adequately raised the question as to what is the proper unit of analysis in organization theory; man, organizations or man-in organizations.<sup>15</sup> There is no denying that the macro-micro-macro cycle has been evident in organizations just as in many other sciences.<sup>16</sup> Scientific management

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<sup>14</sup>Ernest Nagel, "Problems of Concept and Theory Formation in the Social Sciences," in Maurice Natanson, editor, Philosophy of the Social Sciences, Random House, New York, 1963, p. 203.

<sup>15</sup>Fritz J. Roethlisberger, "Contributions of the Behavioral Sciences to a General Theory of Management," in Harold Koontz, editor, Toward a Unified Theory of Management, McGraw Hill Book Company, Inc., 1964, p. 42.

<sup>16</sup>William G. Scott, "Organization Theory: An Overview and An Appraisal," Academy of Management Journal, Vol. IV, No. 1 (April, 1961), p. 23.

attempted a macro approach in pursuit of the efficient whole. Human relations ushered in a micro orientation which concentrated its analysis on the smallest unit comprising the organization--man. Macro concepts are once again emerging with consideration being given to the social, political and technical systems within which both man and organizations exist. Micro propositions are formulated around reductive principles which assert the notion that things are as they are because of the elements that compose them. Macro concepts rest on holistic principles which require an account of the subject matter in terms of the combinations of qualities which, when organized, distinguish that subject matter from all others.<sup>17</sup> With economy being a desirable characteristic of science (i.e. the ability to explain much with little), the micro approach appears to the writer to be the most capable of producing significant results. The reason for this position is that knowledge of and ability to predict individual action can enable one to project, to some extent, the behavior of organizations. Imputation of individual characteristics into organizations is essentially the basis for numerous theories concerning the "organizational society."<sup>18</sup> The reverse of this

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<sup>17</sup>Joseph J. Schwab, "What Do Scientists Do," Behavioral Science, Vol. V, No. 1 (Jan., 1960) pp. 3-13.

<sup>18</sup>For an example see Robert Presthus, The Organizational Society, Alfred A. Knopf, New York, 1962.

proposition, however, is not true. It is extremely doubtful that knowledge of organizational behavior alone would provide the equipment necessary to predict individual action. It can be seen that a detailed analysis of the platform and performance of the Republican party since its inception would reveal little about Mr. Republican<sup>19</sup>1968.

Therefore, this study will take the position that methodological individualism is the most productive course for management and organization theory. In the words of Alexander Pope (Essays on Man), "Know then thyself, presume not God to scan; the proper study of mankind is man."

Testing and Selecting Multiple Hypotheses. Social theories face a special problem in that several hypotheses may be available for explaining a given event. The most obvious cases that come to mind are the motivational theories advanced by Herzberg, Maslow, McGregor, et. al. When such a situation develops, the choice among alternative hypotheses (or theories), which are equally consistent with existing information, is admittedly somewhat arbitrary. However, there is general agreement that the criteria of "simplicity" and "fruitfulness" are helpful in making the choice.<sup>19</sup> A

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<sup>19</sup>C. West Churchman and Russell L. Ackoff, Methods of Inquiry, Educational Publishers, Inc., St. Louis, 1950, p. 10.

theory is simpler the less additional knowledge needed to make a prediction, and it is more fruitful the more precise the prediction, the greater its application and the greater its future usefulness. Although it is often possible to measure simplicity, the test of fruitfulness is a different matter and immediately confronts complications. Perhaps the most often encountered difficulty is the inability to establish controlled experiments. Part of the problem is that the exercise of power to modify social conditions for experimental purposes is itself a social variable.<sup>20</sup> As a result of this difficulty, Nagel suggests the use of "controlled investigation,"<sup>21</sup> which does not require, as does experimentation, either reproduction at will of the event or overt manipulation of variables. It does, however, require a deliberate search for contrasting occasions in which phenomena are either uniformly manifested or manifested in some cases but not in others. It also necessitates subsequent investigation in order to determine what factors are related to the differences in the various events. Controlled investigation is nothing more than the scientific attitude and is the absolute minimum requirement for any systematic scientific analysis.

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<sup>20</sup>Ernest Nagel, The Structure of Science, Harcourt, Brace and World, Inc., New York, 1961, p. 451.

<sup>21</sup>Ibid., p. 252.

Other problems distinguishing the social sciences include the fact that it is not uncommon to find assumptions about the subject matter (i.e., Theory X and Theory Y) resulting in a "self-fulfilling prophecy" whereby the assumptions become at least a partial cause of the resulting situation. The opposite may also be true in which case a "suicidal prediction"<sup>22</sup> results. For example, a prediction of pending labor problems may influence both labor and management to reexamine their positions in order to avoid prolonged loss of work, thus averting a strike and rendering the prediction false. No such problems of unintended causation exist in the physical realm.

Social Causation. A causal law in the physical sciences is usually stated in precise mathematical terms. Such an unambiguous law presents quite a contrast to a commonly known "fundamental psychological law" which states:

. . . men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not as much as the increase in their income.<sup>23</sup>

The ambiguity of such a formulation illustrates that social facts are 1) more complex, 2) less repeatable, 3) often only

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<sup>22</sup>Ibid., pp. 468-469.

<sup>23</sup>John Maynard Keynes, The General Theory of Employment, Interest and Money, Harcourt, Brace and World, New York, 1936, p. 96.



indirectly observable, 4) exhibit greater variability, and 5) are extremely difficult to isolate.<sup>24</sup> Thus, an extremely interesting idea appears that is far from obvious. Laws are ex post conceptualizations that report historical fact. Physical events are simply more regular and have fewer exceptions than social events. As a result, their ex post laws are more exact.

These problems, along with associated difficulties such as the value-oriented bias to be discussed in chapter three, make exact predictions impossible in the social sciences. Therefore, management and organization theory must define its criteria for accurate prediction allowing for a wider range of error than physics. This argument may be hypothetically illustrated by allowing  $X_t + 1$  to be the actual value of variable  $X$  in time period  $t + 1$ . Then, the prediction of  $X_t + 1$  will be considered correct if

$$X_t - e \leq X_t + 1 \leq X_t + e$$

where  $X_t$  is the prediction made at time  $t$  and  $e$  is an arbitrary variable chosen by the predictor to indicate the

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<sup>24</sup>Morris Cohen, "Reason in Social Science," in Feigl and Brodbeck, op. cit., pp. 663-664.

maximum allowable error.<sup>25</sup> In a "closed" physical system the magnitude of the variation between  $X_t$  and  $X_{t+1}$  is usually quite small. Unfortunately, the same statement cannot be applied to essentially "open" social systems.

Thus, the unique nature of the social, and therefore management, sciences requires that the arbitrarily small maximum allowable error ( $\epsilon$ ) be somewhat larger than in the natural sciences. Nevertheless, there is nothing inherently ascientific about the subject matter of management and organizations. As Gulick has noted, such an assertion involves certain "obligations of faith." If the social sciences are to be considered scientifically structured fields, obligations are heaped upon them to mark the boundaries of their application, define their terms, gather and organize relevant facts and elaborate fundamental and subordinate theories subject to the tests of fact and logic.<sup>26</sup> Because of these "obligations," the theorists of organizations have sought

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<sup>25</sup>Emile Grunberg, "The Meaning of the Scope and External Boundaries of Economics," in Sherman Roy Krupp, editor, The Structure of Economic Science, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1968, p. 149 and Morris Cohen, "Reason in Social Science," in Fiegl and Brodbeck, op. cit., p. 669.

<sup>26</sup>Luther Gulick, "Management Is A Science," Academy of Management Journal, Vol. VIII, No. 1 (March, 1965), p. 13.

assistance via physical and biological analogies to social phenomenon.<sup>27</sup> The following section will discuss one of the most influential attempts at analogy and point out the promises and dangers of such measures.

### Behaviorism and Scientism

Modern interest in the "behavioral sciences" has created a serious semantic problem for the student of management and organizations. Lest there be any such confusion in the present study, it is necessary to make clear initially how the term "behaviorism" is used in this paper. Behaviorism is not the psychological, sociological and anthropological acts of man. Instead it is a methodological reaction against traditional introspection. Emile Durkheim summarizes the behaviorist's position as follows:

The social realm is a natural realm which differs from others only by a greater complexity. Now it is impossible that nature should differ radically from itself in one case and the other in regard to which is most essential. The fundamental relations that exist between things . . . cannot be essentially dissimilar in the different realms.

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<sup>27</sup>For an interesting biological analogy see Waino W. Soujanen, "Management Theory: Functional or Evolutionary," Academy of Management Journal, Vol. VI, No. 1 (March, 1963), pp. 7-17.

In other words, behaviorism contends that sense experience, which conveys to man information about physical events, provides all the necessary data concerning the behavior of one's fellow man. Analysis of the way one's fellows react to various stimuli does not differ essentially from the way inanimate objects react to stimuli.<sup>28</sup> Therefore, stimulus-response and behaviorism are synonymous. Behaviorism is a natural science that takes the whole field of human adjustment as its own.<sup>29</sup> Certainly this formulation bears little similarity to the contemporary usage of the term "behavioral science."

Although the major influential thrust of behaviorism came in psychology in the early 1900's, the basic concepts of scientism, from which behaviorism evolved, is a rather old methodological problem of the social sciences. Scientism may be regarded as the dogmatic application of the scientific method. Ironically, scientism is not necessarily inclusive of all that is scientific. In other words, the scientistic, as opposed to the scientific viewpoint, is very prejudiced

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<sup>28</sup>Ludwig Von Mises, Theory and History, Yale University Press, New Haven, Conn., 1957, p. 243.

<sup>29</sup>John B. Watson, Behaviorism, Revised ed., W. W. Norton and Company, Inc., Publishers, New York, 1930, p. 11.

in that before it considers the subject, it claims to know the most appropriate means of investigating it.<sup>30</sup> Professor Hayek, in what is perhaps the most detailed historical analysis of scientism on record, accuses a body of scientists and engineers of Paris and specifically those of the Ecole Polytechnique as being the major force of its development.<sup>31</sup> The more instrumental individuals in the scientistic movement were the well known quasi-philosophers Henri de Saint-Simon and a young polytechnician, Auguste Comte!

Although science is a worthy objective of academic endeavor, there has arisen serious doubts as to the universal applicability of dogmatic scientism. Human beings, which form the basis for organizations, are objects to be sure; but they are fundamentally different from any other physical object. Thus, the question arises as to the suitability of

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<sup>30</sup>F. A. Hayek, "Scientism and the Study of Society," Part 1, Economica, Vol. IX (New Series), No. 35 (Aug., 1942), p. 269.

<sup>31</sup>Hayek's treatment of the subject consists of two series of articles in Economica. The first series is, "The Counter Revolution of Science," Parts 1, 2 and 3 in Vol. VIII (New Series), Nos. 29, 30 and 31 dating from Feb., 1941 to Aug., 1941. The second series was entitled "Scientism and the Study of Society," Parts 1, 2 and 3 in Vols. IX, X, and XI (New Series), Nos. 35, 37 and 41 dating from Aug., 1942 to Feb., 1944. A treatment of the philosophy Hayek opposed may be found in Raymond Bayer, Epistemologie et Logique, Presses Universit es de France, Paris, 1954, pp. 187-211.

using identical methods in the analysis of inorganic objects and human beings.

Humanistic Sui Generis. Although several problems considered to be unique to the social sciences were discussed in a previous section, the most challenging has been reserved until now. This issue is no less than the basic nature of man himself. Man has purpose to his action; inorganic objects do not. The objects of the natural sciences react to stimuli according to regular patterns. A ball dropped from a high position will fall according to definite and determinant laws of gravitation and physics. There is no such regularity in the actions of man. The most general prerequisite of human behavior is a state of dissatisfaction and the possibility of removing or alleviating it by taking action.<sup>32</sup> Therefore, the subject matter of the study of management and organizations is fundamentally different from the subject matter of physics, chemistry and astronomy.

Although purposeful human action vis-a-vis nonpurposeful physical object response to stimuli is complicating enough,

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<sup>32</sup>Ludwig Von Mises, Epistemological Problems of Economics, D. Van Nostrand Company, Inc., New York, 1960, p. 24 and John Neville Keynes, The Scope and Method of Political Economy 4th ed., Kelley and Millman, Inc., New York, 1955, p. 86.

there is an additional problem that must be discussed briefly. This is the problem of expectation.<sup>33</sup> Individuals do not exist within a vacuum. The actions of man are influenced, to some extent, by one's evaluation of the possible reactions of others to his anticipated behavior. In spite of the increasing use of "game theory," one often wonders if the full importance of this assertion is appreciated. If a true understanding of human action requires, as this writer believes it does, an understanding of the "psychic state"<sup>34</sup> of others, then it becomes necessary to impute one's expectations into his fellow man. In other words, action is co-determined in that the behavior of one individual is influenced by the prior and expected action of others. Therefore, for any true predictive science of human and organizational behavior, one must consider the effects of changing expectations upon predicted action.

The doctrine that man is the one unique object in the universe whose behavior cannot be explained within the frame-

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<sup>33</sup>Herbert A. Simon, Administrative Behavior, 2nd ed., Macmillian Company, New York, 1957, p. 252.

<sup>34</sup>Ernest Nagel, Logic Without Metaphysics, The Free Press, Glencoe, Ill., 1956, pp. 362-363.

work for all others is, of course, a rather old contention.<sup>35</sup> Within the area of management this very point has been argued by Oliver Sheldon who stated "Where human beings are concerned scientific principles may be so much waste paper."<sup>36</sup> Admittedly, it is the faith of science that sufficiently general and objective principles can be found to cover all situations and that through these principles "reasonable" predictions can be made.<sup>37</sup> One wonders, however, if the imputation of subjective expectations is sufficient cause to disbar the study of human behavior, in and out of organizations, from the domain of science. In fact, it seems that the prohibition of expectation imputation would severely limit such a science.

Limitations of Pure Behaviorism. Any methodological position that reduces the actions of man to a simple stimulus-response relationship is questionable. Behaviorism offers no explanation which may be tested; it simply describes and must,

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<sup>35</sup>George A. Lundberg, "The Postulates of Science and Their Implications in Sociology," in Natanson, op. cit., p. 47.

<sup>36</sup>Oliver Sheldon, The Philosophy of Management, Sir Isaac Pittman and Son, Ltd., New York, 1930, pp. 35-36 and Elton Mayo, The Social Problems of An Industrial Civilization, Graduate School of Business Administration of Harvard University, Boston, Mass., pp. 3-33.

<sup>37</sup>Lundberg, loc. cit.



therefore, be satisfied with the mere recording of events.<sup>38</sup>

Scientism is not only limited but extremely dangerous assuming that the preservation of individual freedom is one objective of systematic organization theory. Hayek points out that in addition to the limitations imposed via the transferability of natural methods to the social areas scientism breeds "social engineering."<sup>39</sup> Comte's own statement that "the purpose of the establishment of social philosophy is to reestablish order in society" reveals the dangers involved. Scientific management provides all too clear a picture of the limitations and dangers discussed. Taylor assumed that science provided solutions to all the problems of man. He made it clear that his objective was:

To prove that the best management is a true science resting on clearly defined laws, rules and principles as a foundation. And further to show that the fundamental principles of scientific management are applicable to all kinds of human activity.<sup>40</sup>

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<sup>38</sup>Von Mises, Epistemological Problems of Economics, op. cit., p. 66.

<sup>39</sup>Hayek, "The Counter-Revolution of Science," Part 2, op. cit., p. 314.

<sup>40</sup>Frederick W. Taylor, The Principles of Scientific Management, Harper and Brothers Publishers, New York, 1923, p. 7.

Dwight Waldo in an outspoken manner states that:

Measurement is in fact the criterion of genuinely scientific research and . . . in the spirit of the scientific maxim, when we can measure, then we know, the assumption is made that measurement solves problems.<sup>41</sup>

Morris Cooke also voices a rather dogmatic statement:

We shall never fully realize either the visions of Christianity or the dreams of democracy until the principles of scientific management have permeated every nook and cranny of the working world.<sup>42</sup>

And finally, Harrington Emerson proclaims "it is not men, materials, money, machines and methods that count, but far more potently theories and principles."<sup>43</sup>

Taylor, his followers and scientific management were guilty of applying their own form of "methodological scientism," whereby the insights of science were applied successively to metals, materials, men and society.<sup>44</sup> Although tremendous advances toward efficiency were made during this

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<sup>41</sup>Dwight Waldo, The Administrative State, The Ronald Press Company, New York, 1948, p. 58.

<sup>42</sup>M. L. Cooke, "The Spirit and Social Significance of Scientific Management," Journal of Political Economy, Vol. XXI, No. 8 (June, 1913), p. 493.

<sup>43</sup>Harrington Emerson, The Twelve Principles of Efficiency, The Engineering Magazine Company, New York, 1913, p. 8.

<sup>44</sup>Robert T. Golembiewski, Men, Management and Morality, McGraw-Hill Book Company, New York, 1965, p. 32 and E. H. Anderson, "The Scientific Revolution and Its Impact on Modern Economics," The Southern Economic Journal, Vol. XXIII, No. 3 (Jan., 1957), p. 233.

era, one cannot help but wonder what the present state of management knowledge might be today if a less dogmatic route had been followed.

Perhaps the picture painted is too dark and the case against scientism too strong. Stuart Chase, fortunately, has stated a position that is undoubtedly the most desirable of all, given the nature of social subject matter. Chase rejects dogmatic scientism in favor of what one might call the "scientific attitude" which is simply the epitome of skepticism. This attitude requires that all scientific findings be developed in a manner open to examination by all.<sup>45</sup> It is the attitude which allows one to accept those techniques which prove valuable and reject those which do not.

What then is the proper methodology for the science of management organizations and what elements can it select from associated disciplines? Must the development of such a science await a Francis Bacon of its own to light its way? Fortunately, organization theory need not grind to a halt and await such a man primarily because it can borrow from the methodological experiences of other areas of study. It has been argued that the methods of the physical sciences are not especially useful in dealing with problems of society. But

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<sup>45</sup>Chase, op. cit., pp. 6-7.

the study of management and organizations is a synthetic discipline which obtains its concepts from many areas.<sup>46</sup>

Therefore, the methodology of any single science, regardless of what it may be, is inadequate for the problems management must face. The following section will attempt to expose the issue of organizational membership as an economic problem, not economics in the fashionable terminology associated with monetary inducements, but rather as a problem of choice and allocation of limited resources among competing demands.

#### Economics of Organizational Membership<sup>47</sup>

Economic decisions (referring once again to problems of choice) are the fundamental decisions men and organizations face. From the viewpoint of the individual, the contention that man is more than an "economic man" is so obvious that it needs little explanation.<sup>48</sup> But to argue or concede that man is motivated by more than money does not invalidate the

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<sup>46</sup>Neil H. Jacoby, "The Role of the University in Management Research," in Koontz, op. cit., p. 208.

<sup>47</sup>Some basic work has been done in this area by Rocco Carzo, Jr. and John N. Yanouzas, Formal Organizations, Richard D. Irwin, Inc., and the Dorsey Press, Homewood, Ill., 1967, pp. 476-486. However, the analysis in this paper bears only slight resemblance to their formulation.

<sup>48</sup>J. J. Spengler, "Generalists Versus Specialists in Social Science: An Economist's View," The American Political Science Review, Vol. XLIV, No. 2 (June, 1950), p. 359.

basic truth that man must choose between competing ends such as economic prosperity and uninhibited personal freedom. Alternatively, organizations may be looked upon as a collection of scarce means of production fit for alternative uses. It is the function of management, then, to use these resources in the most responsible way possible.<sup>49</sup> Therefore, a prospective organization member and an organization may be viewed as two parties, each of which possess certain "goods" the other desires.

The individual seeks economic, security, status and ego need satisfaction, some of which may be satiated within an organization while others must be satisfied without. By entering an organization, one may find wealth and security, but leisure obtained by a restriction of organizational participation may provide status and self-realization. Thus, one must choose between membership and nonmembership, leisure and work.

The organization must also make a choice. Its choice is between the contributions the prospective member can make and

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<sup>49</sup>J. L. Meij, "Management, A Common Province of Different Sciences," Management International Review, No. 5 (1962), pp. 39-40 and Paul J. Gorden, "Transcend the Current Debate on Administrative Theory," Academy of Management Journal, Vol. VI, No. 4 (Dec., 1963), pp. 290-291.

the corresponding dysfunctional consequences such as risks of premature forced retirement as a result of disability, etc. Organizational membership becomes a problem of exchange--exchange between the prospective member and the organization with respect to the advantages and disadvantages of membership as opposed to nonmembership.

In order to develop the analytics of the proposed model, the following assumptions are advanced:

1. Both the prospective member (P) and the organization (L) are utility maximizers.
2. P has limited energy (E) that can be expended in the pursuit of work and leisure or membership (M) and nonmembership (N). L has limited resources with which to obtain the services of P.
3. A uniform time period spent in membership requires twice the energy expenditure as that spent in nonmembership. A unit of energy is signified by the symbol (U).
4. The order of preference between membership and nonmembership is determinant.

Figure 2 reveals the preference map (system of indifference curves) for the perspective member. Curve  $I_1$  shows the locus of all points along which the individual's utility is constant. Curve  $I_2$  shows a constant but higher level of utility while  $I_0$  reveals a constant but lower utility level. Curve  $I_1$  also illustrates that P is indifferent between a combination of  $M_1, N_1$  and  $M_2, N_2$  units of "membership" and nonmembership" goods. To be consistent with assumption one, P will attempt

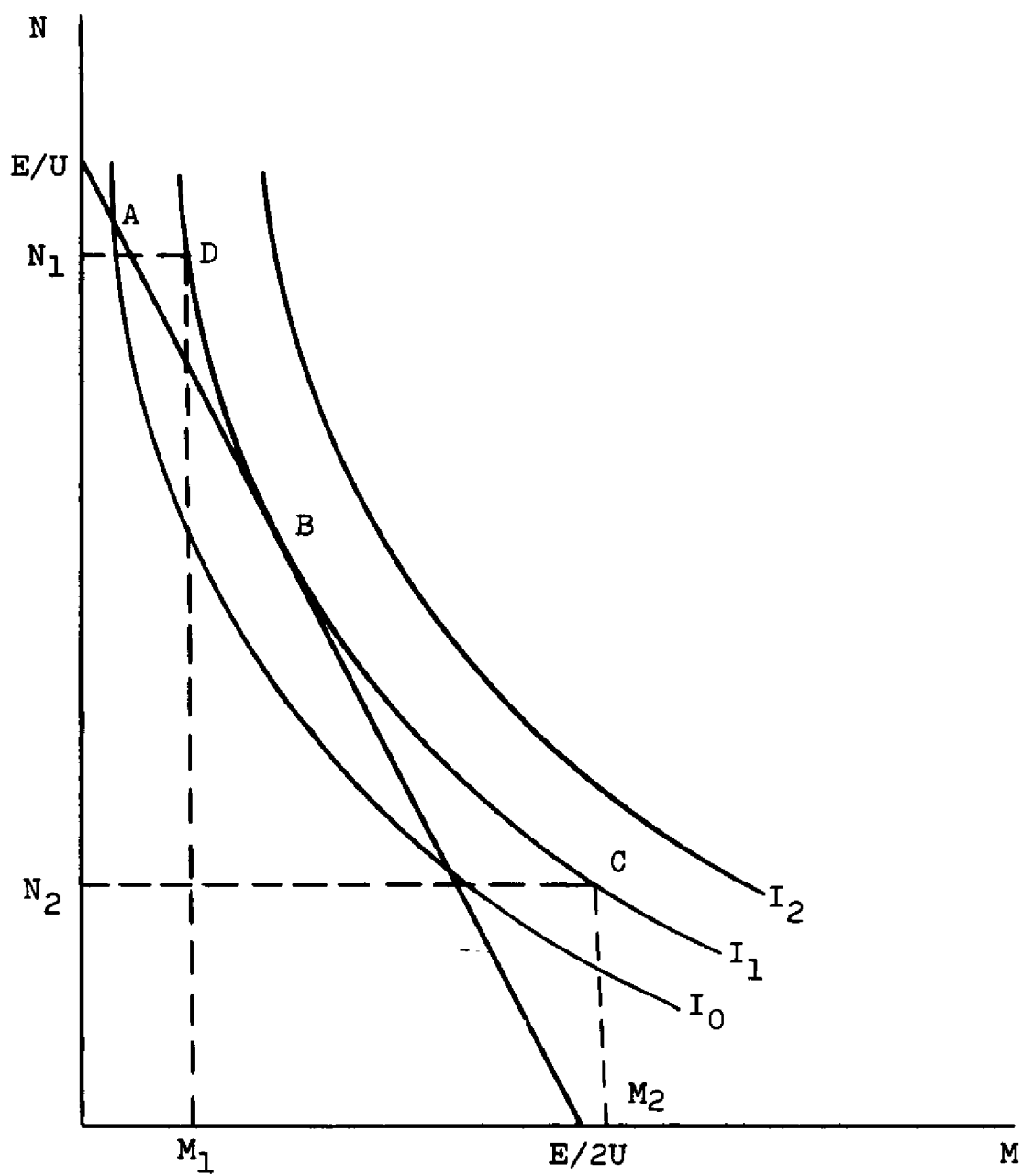


FIGURE 2

P'S PREFERENCE MAP

to reach the highest curve possible ( $I_2$ ). Unfortunately, this is easier said than done because of the energy constraint noted in assumption two. In other words, the I curves show what P is willing to do while line E/U, E/2U shows what he is able to do. The construction of E/U, E/2U is quite simple in that point E/U shows the obtainable quantity of "non-membership goods" if all energy were expended on leisure while E/2U represents exactly the same situation if all energy were expended on work. The slope of the line illustrates the fact that each unit of "membership goods" requires twice the energy as a unit of "nonmembership goods."

The slope of an I curve at any point represents the amount of N that P is willing to sacrifice for an additional unit of M and will be called the marginal rate of substitution of M for N or ( $MRS_{MN}$ ). The slope of the "energy constraint," E/U, E/2U, represents the amount of N that P would have to give up for an additional unit of M or

$$\frac{E/U}{E/2U} = (E/U)(2U/E) = 2U/U$$

Once again referring to Figure 2 it may be noted that at point A the amount of N that P is willing to give up ( $MRS_{MN}$ ) is greater than the amount it is necessary for him to sacrifice ( $2U/U$ ) as measured by the slopes of the respective lines. Being a utility maximizer, P would gladly give up the



necessary units of N at this point for an additional unit of M because by doing so his utility would be increased. Only at point B where  $MRS_{MN} = 2U/U$  is P at equilibrium for at this point, the amount of N he is willing to give up is equal to the quantity he must give up for an additional unit of M. Thus, P obtains an equilibrium, but what about the organization? What additional conditions are necessary before both parties reach a point of exchange or simultaneous equilibrium?

It has been previously noted that P can join the organization (L) if and only if L has a need for his services. To illustrate this "exchange reciprocity" an "organization Edgeworth-Bowley box," which is familiar to economic theory, may be constructed. In Figure 3 the same preference map shown in Figure 2 is illustrated while a corresponding organization preference map is rotated  $180^\circ$  and superimposed on P's map forming a box. The indifference curves of P are convex to O and the curves of L are convex to O'. Also, the "box" has been constructed so that the quantities OM and ON represent the combined holdings of "membership" and "nonmembership" goods for both parties.

Assuming that the "goods" are distributed initially at point K', it can be seen that P possesses  $On_1$  units of N and  $Om_1$  units of M while L holds  $n_1N$  of N and  $m_1M$  of M. At this point P is on curve  $I_0$  and L is on curve  $J_0$  so that the

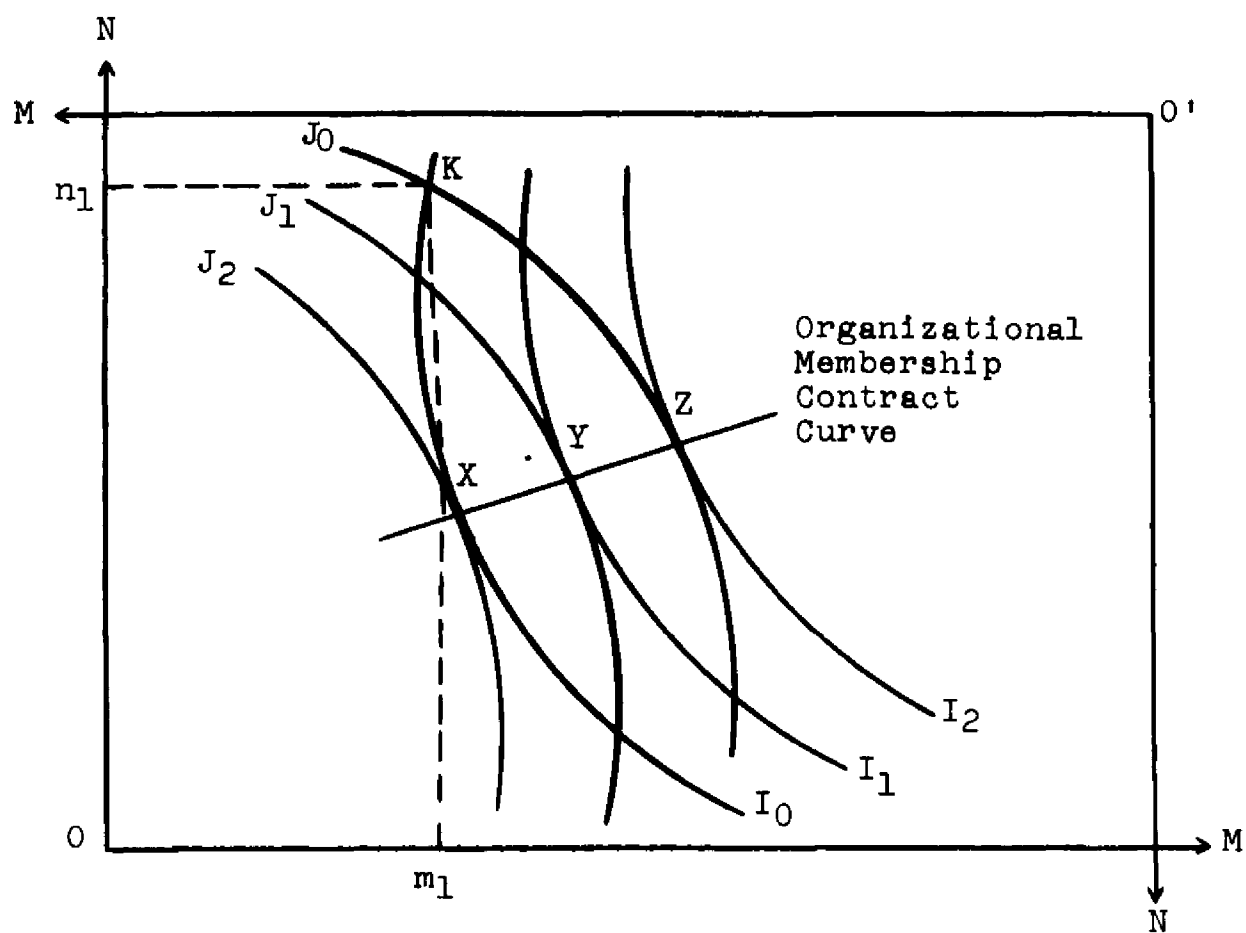


FIGURE 3

THE ECONOMICS OF ORGANIZATIONAL MEMBERSHIP

$MRS_{MN}$  for L is less than the  $MRS_{MN}$  for P, as indicated by the slopes of the respective curves. Individual P can sacrifice more units of "nonmembership goods" for an additional unit of "membership goods" than the organization requires. Because of this, either one or both of the parties may benefit from exchange. If exchanges of N's by P for M's from L followed  $I_0$ , P would be no worse off because he would remain on a curve of constant utility ( $I_0$ ), but the organization would become increasingly well off as it is moved from curve  $J_0$  to higher curves  $J_1$  and finally  $J_2$  as exchange advanced toward point X.

An example of such an exchange would be the young shift worker who, by virtue of his lack of seniority, is required to work the "extra board." In many cases the individual does not work an entire forty-hour week. However, jobs are available on "undesirable" shifts and operations, and it is well known that those "extras" who accept these assignments are placed in regular positions sooner than those who do not. As a result, P might accept the "dirty" jobs although leisure may be worth just as much due to the extreme inconveniences such jobs create. His total utility is not decreased because the increased utility of additional M is just offset by the decreased utility of fewer N with resultant change in utility equal to zero. The organization in this case receives all the benefit of P's increased work.

It is also conceivable that the exchange may take place along  $J_0$  in which case P would receive all the benefit and the total utility of the organization would remain constant. The first example that comes to mind of this type of exchange relates to the faculty member who leaves a teaching position to complete his terminal degree. The disutility of rescheduling classes, temporary appointments and a salary increase sufficient enough to insure his return upon completion may be just enough to equal the increased utility of an additional terminally qualified faculty member. Thus, the faculty member receives the benefits of the exchange.

These are extreme theoretical examples because the disutility of a sacrifice will seldom, if ever, exactly equal the utility of attainment. In most cases exchange will proceed from K to Y; the exact path of which is determined by the relative bargaining powers of the two parties. Regardless of the path between these extremes, both parties will increase their total utility until some point on XYZ is reached. At any point along this line the  $MRS_{MN}$  for one party is equal to the  $MRS_{MN}$  of the other so that no additional exchange may take place without at least one party's total utility being reduced. Thus, XYZ is the line toward which exchange progresses, but once it is attained, exchange will cease and an equilibrium will be established. Therefore, the equilibrium condition

for exchange is that the  $MRS_{MN}$  of one party be equal to the  $MRS_{MN}$  of the other or that an indifference curve of one is tangent to an indifference curve of another. At this point, the maximum amount of N that P is willing to sacrifice for an additional M is just equal to the minimum amount of N that L would accept in exchange for an additional M. Subjectively, this is the point that is reached when P applies for membership in L and L accepts P's employment. For this reason the writer refers to line XYZ as the "organization membership contract curve."

In spite of the fact that this model is abstract and extremely theoretical, its ramifications are evidenced daily in organizational life. But the point to be made is the underlying similarity between the concept of rational choice so familiar in microeconomic theory and the psychological decision to become associated with an organization. It is a matter of economics and the allocation of limited resources among competing uses. A choice must be made between the relative advantages and disadvantages of membership and nonmembership. In this case, the choice is no different than the decision to purchase good<sub>1</sub> or good<sub>2</sub>. The process is psychological and the choice sociologically influenced, but the problem is economic, and organization theorists would seriously err to forget this fundamental formulation.

No doubt social research has done much to destroy the concept of the "economic man," but it has left undamaged the rationale of the utility maximizer and the basic theorems of resource allocation. In view of this, the methodology of economics should provide many interesting analogies from which management and organization theory may borrow.

### General Semantists As Epistemological Dualists

To this point several epistemological problems of management and organizations have been noted; yet, the issues developed dealt with the nature of the subject matter itself (the "knowable") and with the inexact or probabilistic nature of the resulting examinations in social theory (the "knowledge"). Thus, there remains the process of knowing, which to this point has remained untouched by the analysis. Initially, it becomes necessary to theoretically examine the actual process by which objective phenomena come to be known to man while postponing topics relating to the merit of the specific processes until the next section of the paper.

At one time many philosophers advanced a position that has come to be known as epistemological monism. Basically, this argument asserts that when things are known they are identical, element for element, with the content of the knowing state.<sup>50</sup> Although few subscribe explicitly to this

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<sup>50</sup>McEwen, op. cit., pp. 7-8.

position today, it is all too obvious that everyone from time to time confuses the perception of an object with the object itself. In other words, one often acts as if perceptual reality is identical to objective reality. What is more obvious perhaps is the confusion of the words (symbols) used to describe perceived events and the reality that actually exists.

The general semantists have labored long searching for the relationship between language, thought and action and have taken a position counter to epistemological monism. One might call their argument epistemological dualism which asserts that whatever knowledge one has of real objects or occurrences is only indirect and representative of objective reality. Thus, the datum whereby one knows any object is not identical with the object known. Obviously, the logical extension of this argument is that if the sense datum differs, the symbols used to represent the object are even more different. This is as one would expect since if perception varies from reality, symbols explaining perceptual images must vary from the image which is already at variance with the existing event. Dualism reveals that in all situations the scientific context in which objects are found is a triadic relationship involving 1) a "mind" which interprets, 2) some specific objective occurrence and 3) some "sign"

which represents the occurrence.<sup>51</sup> Such a relationship is not at all unfamiliar to the general semantists. Figure 4 is representative of their argument.<sup>52</sup>

Deviating somewhat from the traditional explanation, suppose the referent is an objective occurrence, either physical or social. It is the thing that actually happens; Korzybski's "mad dance of electrons."<sup>53</sup> Although there is objectiveness, it must pass through the observer's perceptual process before it becomes known. This so called "fact" that is observed is not as concrete as it may seem. When perception takes place, thought occurs; and although it is unconscious, only certain characteristics of the occurrence are retained. To fail to recognize this is to commit the "fallacy of misplaced concreteness."<sup>54</sup> All such "facts" are detached from their context by an abstraction process so that it is not possible to grasp all the aspects of any given event.

Abstraction does not stop here, however, because phenomena recorded only in one's mind are of little use to anyone,

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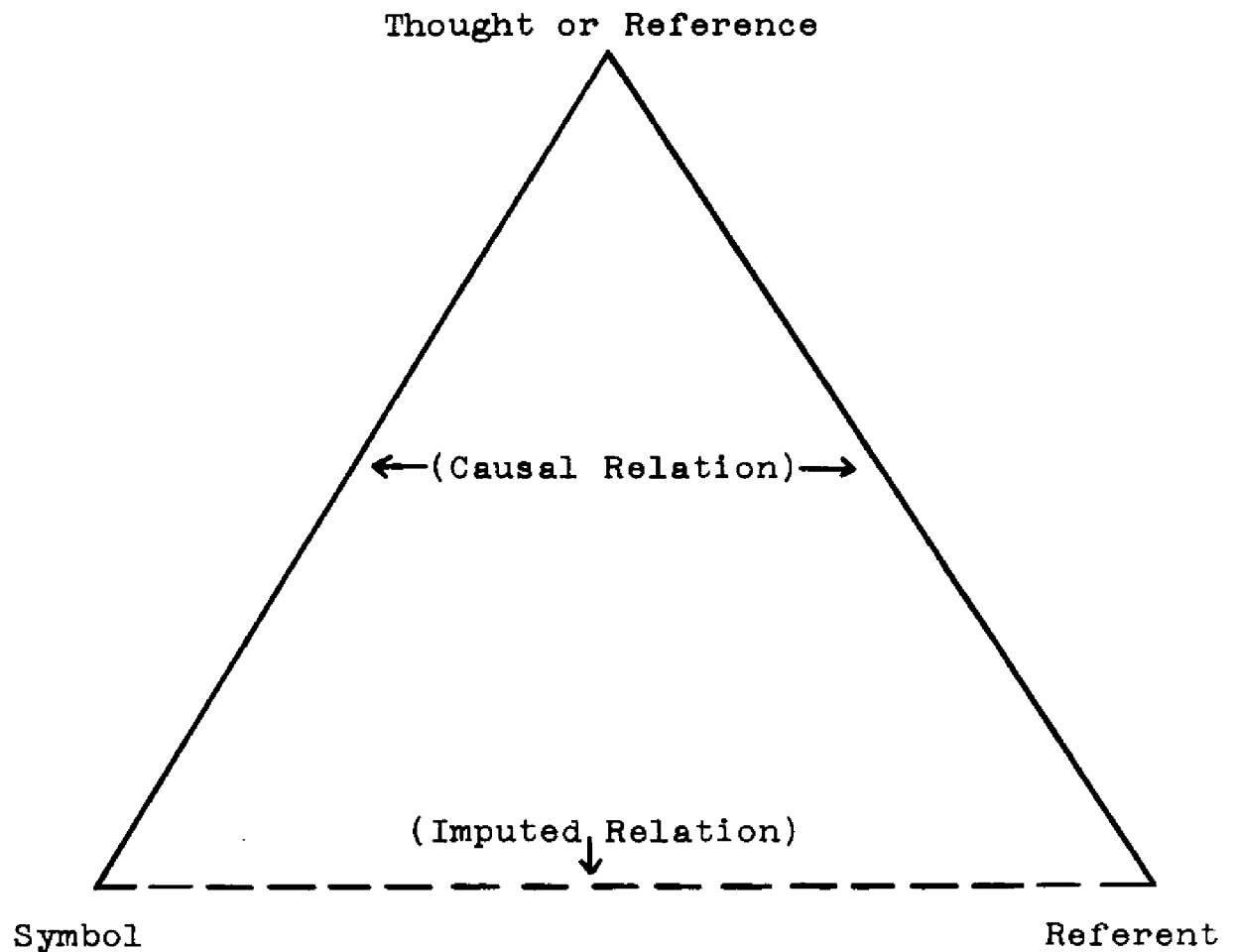
<sup>51</sup>Ibid., pp. 8-9.

<sup>52</sup>C. K. Ogden and I. A. Richards, The Meaning of Meaning, Harcourt, Brace and World, Inc., New York, 1923, pp. 11-15.

<sup>53</sup>Alfred Korzybski, Science and Sanity, 3rd ed., The Institute of General Semantics, Lakeville, Conn., 1948, pp. 386-412.

<sup>54</sup>Alfred Schultz, "Common Sense and Scientific Investigation of Human Action," in Natanson, op. cit., p. 303.





SOURCE: Diagram obtained from C. K. Ogden and I. A. Richards, The Meaning of Meaning, Harcourt, Brace and World, New York, 1923, p. 11.

FIGURE 4  
TRIADIC NATURE OF SYMBOLS

save the recorder. The observer must, therefore, report the recorded data which requires additional abstraction. One must select the proper symbols to report perceptual ideas and no symbol is capable of representing all the characteristics of an event recorded in one's mind just as perception is not capable of sensing all there is about an objective occurrence. In the final analysis, the report of a physical or social event is at least three steps removed from the process being described. Only an imputed relationship exists between the referent and the symbol. This abstraction cannot be prevented, but a lack of awareness of the process can. So, when the scientist accepts epistemological dualism, he abandons the search for "absolute truth" and seeks instead an emendable system of reasonably acceptable constructs concerning the referent.<sup>55</sup>

Philosophically there remains additional questions. Given that abstractions are necessary and even desirable in some cases and assuming further that perfect knowledge about any "mad dance of electrons" is impossible, what is the most accurate route to knowledge? How does one know what causes conflict in organizations, and furthermore how does one report

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<sup>55</sup>McEwen, loc. cit.

his findings once a hypothesis is formed? Some argue that basic truths about man provide the foundation via deductive logic for all knowledge. At the moment when man began to argue such points and to raise questions as to the most accurate span of the triangle from referent to symbol, epistemology was born.

### Observations on Epistemology

Reported accuracy is the final stage of science. The inclination of man to treat words as materially connected with objects rather than simply the symbols, as in principia mathematica,<sup>56</sup> causes untold intellectual and academic problems. Identification via similarities, even at the expense of important differences, is perhaps the heart of the confusion between SCIENCE<sub>natural</sub> and SCIENCE<sub>social</sub>.

It is equally erroneous, however, to neglect the similarities between the two "SCIENCES" since there are only two starting points for the acquisition of knowledge: deduction

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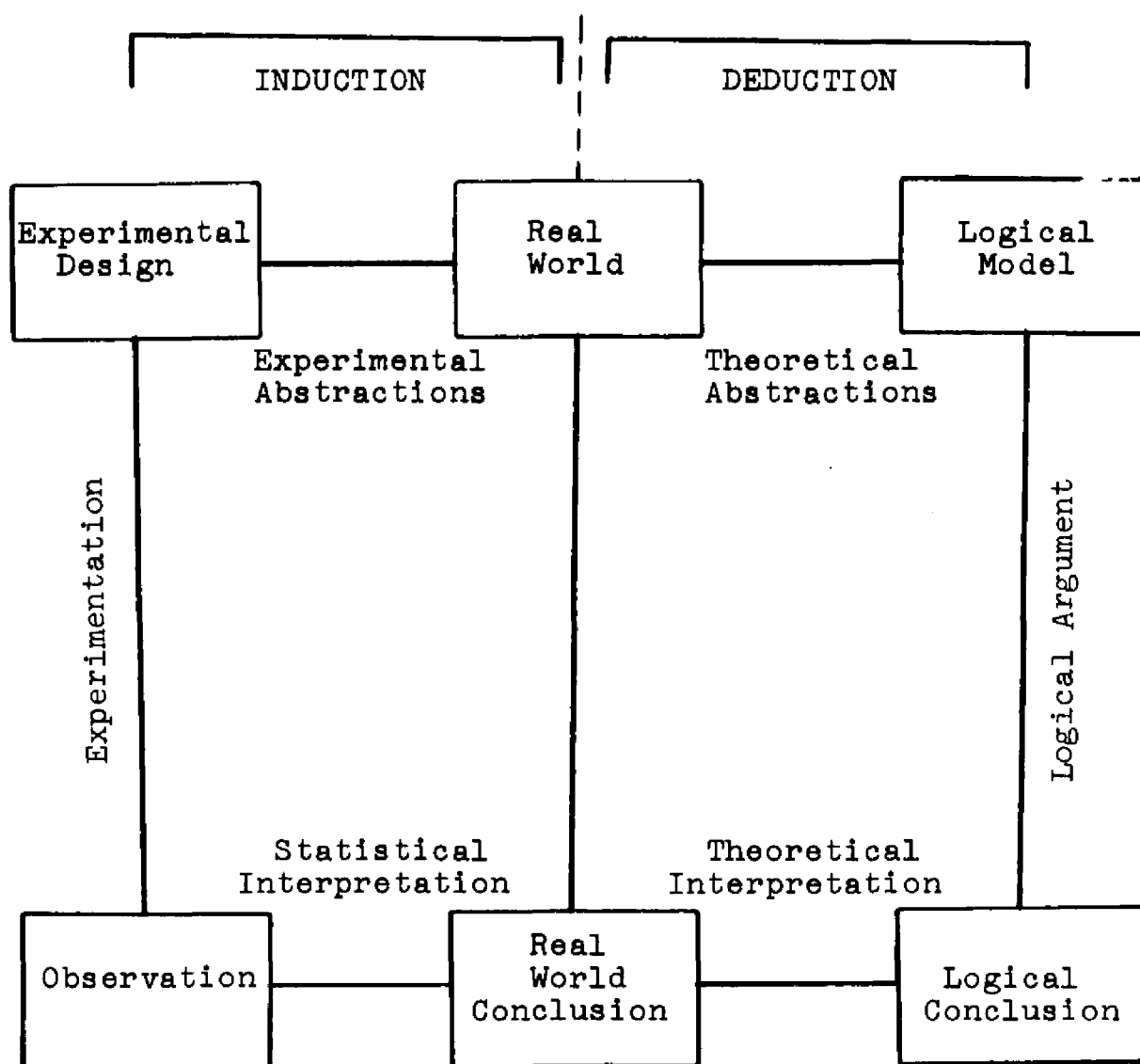
<sup>56</sup>Merle B. Turner, Philosophy and the Science of Behavior, Appleton-Century-Crofts, Publishers, New York, 1967, p. 107.

and induction.<sup>57</sup> The following diagram, Figure 5, illustrates the logically valid epistemological positions. Noting first the right half of the diagram, one observes the deductive method. The initial step is to abstract certain theoretical propositions from the real world in order to simplify the complexity of reality. For instance, one might decide to deal with only the economic aspects of the motivation of man. Of course, it is possible to recognize that motivation is more than economic, but in order to simplify this very complex situation, only certain aspects are explicitly analyzed. After establishing the basic premises and constructing the necessary "abstract propositions," a logical model is constructed on the basis of which a deductive argument is formulated. Although realism is important, the logical argument often places a greater emphasis on the logical consistency between premise and conclusion than on correspondent practical reality. The deductive method moves from the general propositions of theoretical abstraction to the specific phenomenon to be described or explained.

Inductive reasoning also begins with the real world. However, its abstractions are experimental in that experiments are designed to observe only certain aspects of reality.

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<sup>57</sup>Feibleman, op. cit., p. 245.



NOTE: C. E. Ferguson, Microeconomic Theory, Richard D. Irwin, Inc., Homewood, Ill., 1966, p. 4.

FIGURE 5  
THE LOGICAL METHODS OF SCIENCE

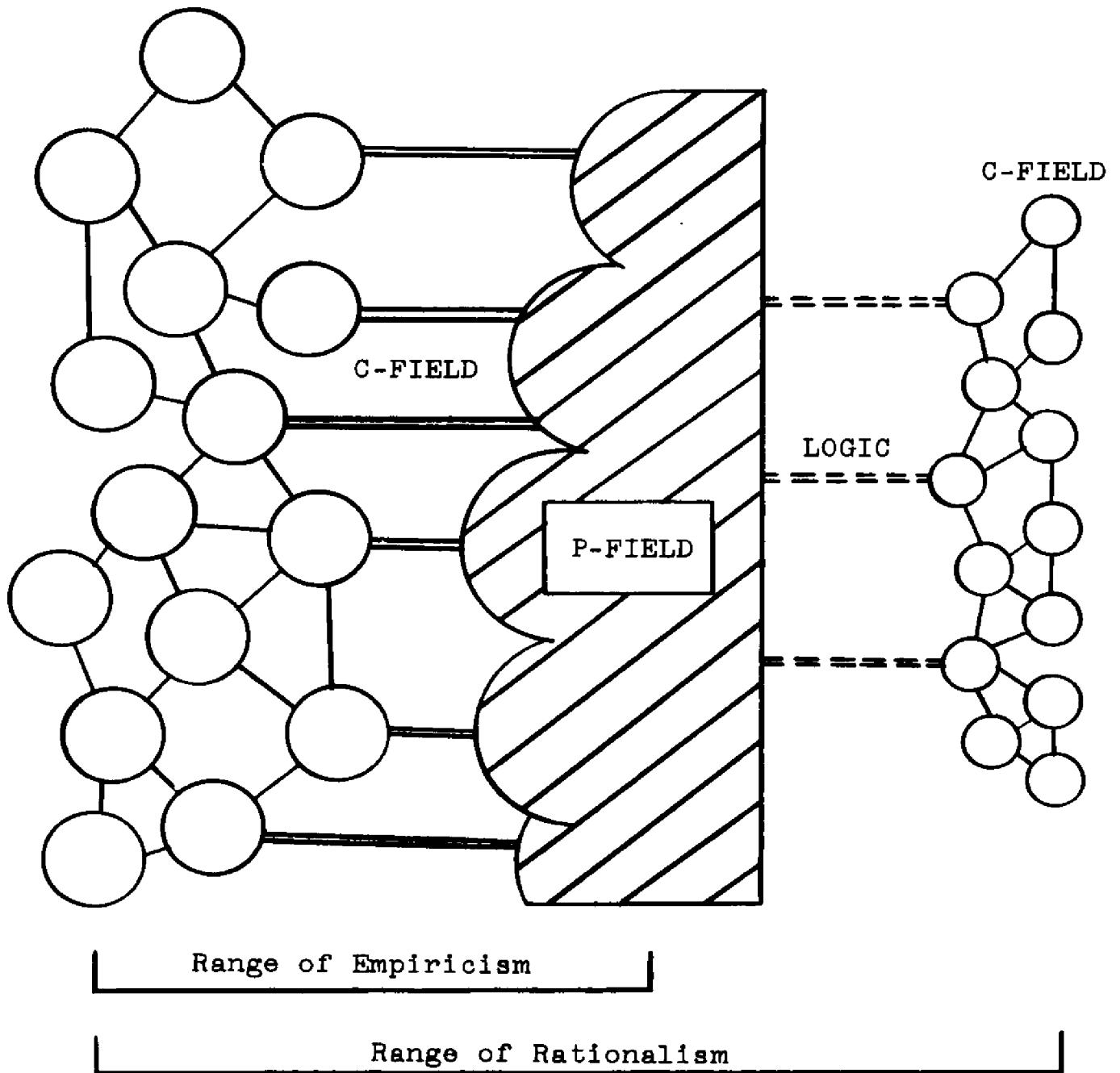
It should be noted that the word "abstraction" is used because the process of experimentation necessarily attempts to hold certain things constant while concentrating on others deemed to be of primary interest. By way of the experiment, numerous observations are made and the results are given statistical or probabilistic interpretation. Thus, one refers or projects the characteristics of the "whole" based on observations of its "parts" and correspondingly moves from the specific to the general.

With a stated objective of this paper being the relationship between general semantics and methodology, it becomes necessary to translate the above distinction into a psychic process so that the association between the referent and thought may be noted and the stage set for the following discussion. Figure 6 represents the structure of science regardless of one's epistemological sympathies.

In the illustration, sensory elements are labeled "protocal experience" which form a P-field, and any purely rational constructs are designated as concepts forming a C-field.<sup>58</sup> Protocols are given from without and are capable of perception. Rules for passing from the protocal to

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<sup>58</sup>Henry Margenau, "What Is A Theory," in Krupp, op. cit., p. 27.



NOTE: The above diagram was adapted in part from Henry Margenau, "What Is A Theory?" in Sherman Roy Krupp, editor, The Structure of Economic Science, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1966, p. 30.

FIGURE 6

THE STRUCTURE OF SCIENCE

the concepts or constructs are called "rules of correspondence."<sup>59</sup> In the diagram, double lines designate rules of correspondence, circles are concepts, and single lines between concepts depict logical connections relating one concept with another. Measurement proceeds along double lines while reasoning and theoretical analysis move along the single ones. A theory, therefore, becomes a complex of circles (concepts) together with the double lines (rules of correspondence) that connect them to the P-field.<sup>60</sup> This, then, is the critical point from the position of the general semantists qua epistemological dualist; one's conception of the material world is subjective; but not entirely so, for there would be no such subjective impressions unless there was an objective process to which it referred.<sup>61</sup> This objective-subjective relationship creates a duality which lies at the base of numerous communication difficulties.

Appealing as it may be, the above explanation is not acceptable in toto to one group of philosophers known as the rationalists. Their fundamental point, which is well taken, is that observations would be nothing but clumsy accumulations

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<sup>59</sup>Ibid., p. 29.

<sup>60</sup>Ibid., p. 30.

<sup>61</sup>Feibleman, op. cit., p. 252.



of disconnected occurrences, a heap of confusion if it were not clarified, arranged and interpreted by the systematic prior rationality of man's mind.<sup>62</sup> This basic rationality is represented by the small circles and comes before experience or the P-field. It is this logic that makes the P-field meaningful so that the rules of correspondence may be constructed in order to relate the C and P-fields. Although this is not inconsistent with the dualistic contention (since, according to the rationalists, reality is not necessarily material but may be manipulations of the mind), it does raise serious questions concerning the strictly empirical nature of a science of management and organizations. In view of this, the remaining portion of this section is devoted to an analysis of the basic epistemological positions most evident in the contemporary study of organizations.

### Constructs of Empiricism

Like any other philosophical position, empiricism is simply a name used to represent a whole series of arguments; but for purposes of illustration, an extreme position known as ultra-empiricism will be examined. Perhaps the most

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<sup>62</sup>Ludwig Von Mises, Human Action, Yale University Press, New Haven, Conn., 1949, p. 41.

informative testimony of this position is given as follows.<sup>63</sup>

If one designates the process of science to consist of assumptions (A), theory (B), and consequences (C), there must exist no empirical difference between the three. In other words, empirically  $A \equiv B \equiv C$ . If one takes the set of assumptions (A+) in which  $A+ \supset A$  (meaning A is a proper subset of A+ or that there are some elements in A+ not present in A), one would reject that part of A+ not present in A since  $A+ \neq B \neq C$ . Also, if  $C \supset C-$  the authenticity of C- does not validate A and B because not all of C is confirmed. In Samuelson's own words:

If C has complete empirical validity then bully for it, and bully for B and its assumptions A. But we cannot say bully for A+ in the same sense unless its full content  $A+ \equiv B+ \equiv C+$  is also empirically valid.<sup>64</sup>

Although more will be said concerning the empirical verifiability of assumptions, the above quotation serves the purpose of illustrating the argument of the ultra-empiricists. Individuals who advocate this position are not content with logical tests resulting from a deductive process, but insist upon direct empirical verification. To them testability means

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<sup>63</sup>The content of the argument was taken from Paul A. Samuelson, "Comments on Ernest Nagel's Assumptions in Economic Theory," in Joseph E. Stiglitz, editor, The Collected Scientific Papers of Paul A. Samuelson, Vol. II, The M.I.T. Press, Cambridge, Mass., 1966, pp. 1775-1777.

<sup>64</sup>Ibid.

direct confirmation of objective data obtained by sense observation.<sup>65</sup> Concepts are based on sense impressions and theories result from the inductive process consisting of the generalizations of propositions on the basis of the examination of specific cases.<sup>66</sup> Such is the extreme position of ultra-empiricism. Epistemologically, it argues that perceptual knowledge is the ultimate datum standing in need of no explanation whether with reference to the heteronomous activity of the mind or in any other manner.<sup>67</sup> However, before examples of such a position can be applied to concrete examples in organization theory, it is necessary to provide a brief historical perspective of its development.

Historical Perspective.<sup>68</sup> Empiricism has a long history. For Protagoras (450 B.C.) knowledge and sensation were identical,

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<sup>65</sup>Fritz Machlup, "The Problem of Verification in Economics," The Southern Economics Journal, Vol. XXII, No. 1 (July, 1955), p. 8.

<sup>66</sup>Herbert G. Hicks and Friedhelm Goronzy, "On Methodology in the Study of Management and Organizations," Academy of Management Journal, Vol. X, No. 4 (Dec., 1967), p. 373, A. Cornelius Benjamin, "Is the Philosophy of Science Scientific?" Philosophy of Science, Vol. XXVII, No. 4 (Oct., 1960), p. 356 and Mario Bunge, "The Place of Induction in Science," Philosophy of Science, Vol. XXVII, No. 3 (June, 1960), p. 262.

<sup>67</sup>Nikunja Vihari Banerjee, Language, Meaning and Persons, George Allen and Unwin, Ltd., London, 1963, p. 14.

<sup>68</sup>Most of the historical background may be found in Churchman and Ackoff, op. cit., pp. 50-74.

and Aristotle after "solving the problems of deduction" in Prior Analytics, turned to inductive problems in his Posteriori Analytics! But the first systematic effort to establish empiricism as a philosophy of science was made by John Locke (1632-1704).

Basically, Locke's argument began by defining "simple ideas" which are supplied to the mind directly by sensation, because reason, according to him, could not manufacture but only manipulate ideas. Thus, as the argument goes, these simple ideas precede all rational processes. Later modification of his theory allowed for "compounding" which made possible the union of simple ideas into more complex ones.

George Berkely questioned Locke's "simple ideas" and argued that they depend on experience, not sensation, with experience being the more complex of the two because it contained memory and generalization. Thus, according to Berkely, one sees only a "variety of light and colors." Based on these arguments, the idea that man's mind is a tabula rasa (blank tablet) upon which experience writes was developed.

John Stuart Mill rejected in principle "any supposed modes of philosophizing, which do not profess to be founded

upon experience."<sup>69</sup> He obviously made an exception in the case of logic and mathematics. More recently, Karl Marx objected to rational or logical sciences arguing that logic was class determined and advocating a form of polylogism.<sup>70</sup> Although he offered no empirical alternative to the rational methodology of science, Marx is mentioned because of his extreme distrust of reason. Historically, one might say that the empiricists of management and organization theory have a rather rich heritage.

A Posteriori Organization Theory. Recent advances toward a theory of organizations have brought with them an increased interest in empirical research and a profound distrust of "armchair reasoning." As one writer states:

One reason why management has not further developed as a science is because so far it has relied on deductive logic. It has adopted generalizations developed by educators and practitioners, then disseminated them to students as universals . . . what is needed to close the gap between reason and the real world is inductive logic.<sup>71</sup>

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<sup>69</sup>John Stuart Mill, A System of Logic, 8th ed., Longman, Green and Company, London, 1919, Book VI, Chapter 9, Sec. 3.

<sup>70</sup>Von Mises, Human Action, op. cit., p. 31.

<sup>71</sup>Maneck S. Wadia, "Management Education and the Behavioral Sciences," Advanced Management, Vol. XXVI, No. 9 (Sept., 1961), p. 9.

Roethlisberger, through his action and by explicit statement, advocates "grass root empiricism" until more facts and relationships are uncovered. Thus, he maintains that "the quest for knowledge through the accumulation of facts ought to be the paramount objective of the behavioral sciences."<sup>72</sup>

The Harvard Business School's studies at the Hawthorne Works of Western Electric, in which Roethlisberger participated, is praised as one of the most influential studies in management history. In order that some appreciation may be gained of the magnitude of this study, a few brief details will be elaborated to illustrate its empirical foundation.

The Hawthorne Studies in Chicago took place over a five-year period between 1927-1932 during which time over 20,000 individuals were studied. In the beginning the general interest was primarily directed toward an analysis of the relationship between working conditions and incidents of fatigue and monotony.<sup>73</sup> Experimental conditions were established and many of the methods of empirical research were utilized including observation, personnel interview and

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<sup>72</sup>Roethlisberger, "Contributions of the Behavioral Sciences to a General Theory of Management," in Koontz, op. cit., p. 65.

<sup>73</sup>F. J. Roethlisberger and William J. Dickson, Management and the Worker, Harvard University Press, Cambridge, Mass., 1956.

modified questionnaires. On the basis of these efforts, the original hypothesis was found to be relatively insignificant, and the true importance of the social nature of man came to be appreciated, thus ushering in the Human Relations Era.

Another rather influential empiricist, by virtue of his research, is Frederick Herzberg who, after making use of a secondary "survey approach" in Job Attitudes: Review of Research and Opinion, entered upon a "fresh approach" in The Motivation to Work.<sup>74</sup> In the latter work, Herzberg conducted a semi-structured survey of 200 professional workers in the immediate area of Pittsburg. From this he postulated that the factors involved in producing job satisfaction are separate and distinct from the factors leading to job satisfaction. In a later study, Work and the Nature of Man, he further tests his hypothesis in an effort to form "a general theory of work and the nature of man." Thus, Herzberg stands as one of the true champions of empiricism in management and organization theory. Like so many others, his advocacy is not explicit but is easily inferred by the methods of his research.

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<sup>74</sup>Frederick Herzberg, Bernard Mausner, Richard O. Peterson and Dora F. Capwell, Job Attitudes: A Review of Research and Opinion, Psychological Service of Pittsburg, 1957 and The Motivation to Work, 2nd ed., John Wiley and Sons, Inc., New York, 1959.

If one desires an explicit advocacy, a somewhat emphatic one comes from Harold Koontz. Koontz strongly asserts that the principles developed by Fayol et. al. were not a priori but based upon a posteriori information developed through a lifetime of experience.<sup>75</sup> The assumption is that anything a priori is "bad." This assertion equates "a lifetime of experience" to "empirical knowledge" and raises some serious questions of its own. Specifically, need a posteriori information be simply lived or must it be controlled. This analysis assumes that at least some systematic control must be attempted before such empirical data are recognized as constituting scientific knowledge. For unless some effort is expended toward control, there is no check on the selective perceptual processes of the observers. Therefore, the "principles" proposed by the traditional school, with a few exceptions, may be recognized as hypotheses based on experience, but the limited and unique experiences upon which they are founded hardly support their claims of universally applicable principles.

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<sup>75</sup>Harold Koontz, "Making Sense of Management Theory," in Koontz, op. cit., p. 12 and William V. Muse, "The Universality of Management," Academy of Management Journal, Vol. X, No. 2 (June, 1967), pp. 179-184.



Many individuals associated with the study and practice of management have recognized the empirical foundations of scientific management while others have chosen to criticize it as "untestable."<sup>76</sup> Regardless of its testability, the research into "hard facts" is conceded to have been the underlying principle of this school of thought.<sup>77</sup> Emerson as well as Taylor referred often to observations which were to provide the foundations of the science of management.<sup>78</sup> There is little doubt that it was the disciples of scientific management that initiated the systematic empirical test or experiments in management that had for a long time been common place in the physical sciences. The following statement by Taylor gives some idea of the importance he attached to the gathering of data.

The manager assumes the burden of gathering information and all the traditional knowledge which in the past was possessed by the worker and then classifying, tabulating and reducing this knowledge to rules, laws and formulae.<sup>79</sup>

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<sup>76</sup>Herbert A. Simon and James G. March, Organizations, John Wiley and Sons, Inc., New York, 1958, p. 32.

<sup>77</sup>Lyndall Urwick, The Elements of Administration, Sir Isaac Pittman and Son, Ltd., London, 1942, p. 17.

<sup>78</sup>Emerson, op. cit., p. 195 and Taylor, op. cit., pp. 57-59.

<sup>79</sup>Taylor, op. cit., p. 36.

As pointed out previously, one of the results of the development of the social sciences was a serious reevaluation of the applicability of scientific procedures to the study of man. One would expect, therefore, that little empirical investigation would accompany the development of the sciences of society. Fortunately, or unfortunately, depending upon how one views such matters, a notion of this type is incorrect as the Hawthorne Studies illustrate. Since these studies, many investigations have been conducted and names like Mayo, Likert, Cyert, Herzberg and others have become 'almost completely identified with empirical methodology.'<sup>80</sup> As a matter of fact, the before mentioned attitude of Koontz concerning the importance of empirical investigation is most likely not atypical at all in the area of organizations. But, in spite of empiricism's appeal, one must recognize the adage "contemporary fashion does not alone an adequate methodology make."

Historicism and Problems of Empirical Theory. Some would deny altogether the possibility of deriving a posteriori

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<sup>80</sup>For examples see Richard M. Cyert and James G. March, A Behavioral Theory of the Firm, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1963, pp. 47, 67, 149-239 and Renis Likert, New Patterns of Management, McGraw-Hill Book Company, Inc., New York, 1961.

laws from historical experience. Empirical data, according to this group, deals only with the past and can never turn to the future. Von Mises summarizes this group's feelings by stating "history makes man wise, but not competent to solve concrete problems of the future."<sup>81</sup> The argument continues to call for a method that will transcend the individualistic and temporal characteristics of the fallacies of human perception and time.

General semantics has long attempted to make man aware of the perceptual problems evidenced by one's limited ability to recognize differences. Although perceptual variation is seriously denied by only a few monists, an empirical epistemology must certainly contend that a significantly large amount of such variation does not exist. The following statement should suffice to confirm this contention.

. . . Yet it is plain, the ideas they (the qualities of the objects that affect one's senses) produce in the mind enter by the senses are simple and unmixed. And there is nothing can be plainer to a man than clear and distinct perception, he has of those simple ideas; which being each in itself compounded, contains in it nothing but one uniform appearance or conception of the mind.<sup>82</sup>

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<sup>81</sup>Von Mises, Epistemological Problems of Economics, op. cit., p. xv.

<sup>82</sup>John Locke, An Essay Concerning Human Understanding, abridged and edited by Raymond Wilburn, E. P. Dutton and Company, New York, 1947, p. 34.

This statement, postulating absolute perceptual uniformity with the observed, appears extremely objectionable to a general semantist and is fundamentally at odds with current psychological research. The idea of the "mental filter"<sup>83</sup> is too well recognized to accept such a proposition. Thus, the first objection to a purely empirical theory of organization--perceptual problems of observation.

Another problem area of pure empiricism could be labeled difficulties of "evolution and flux." From the viewpoint of general semantics, this might be called a methodological "is of identification" because, as Hayek so adequately argues, it is useless to think that observed information at a given moment will yield anything of use beyond that particular time and place.<sup>84</sup> This appears as a relatively radical viewpoint, yet, one is forced to appreciate it when one recalls the relative meaning of MOTIVATION<sub>1913</sub> and MOTIVATION<sub>1968</sub>. In 1913, because of the economic position of the average worker, the relationship between monetary incentives and positive motivation was more direct than it is in 1968. However, the theory is still "motivation theory" and to many the

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<sup>83</sup>Raymond V. Lesikar, Business Communication, Richard D. Irwin, Inc., Homewood, Ill., 1968, pp. 48-59.

<sup>84</sup>Hayek, "Scientism and the Study of Society," Part. 2, op. cit., p. 49.

mere similarity of the label is confusing. Motivation, then, as general semantics points out, is not a thing but simply a label. It can be defined or given meaning only in terms of the relationship between man and the factors in his economic, social, political and psychological environment.

Temporal factors are, however, not the only ones requiring respect of the position of historicism. Ernest Dale points out that universal empirical theories contact difficulties when applied to the multiplicity of economic, social and religious organizations. As a solution he offers a rather "historic" answer in the form of the "comparative approach." This approach is concerned with a recognition of fundamental similarities among different situations within a given class.<sup>85</sup> For instance, a theory might be developed for economic organizations and another for religious organizations. It is really quite simple--only comparable situations should be compared! Dale's argument would contend that the Hawthorne Studies were interesting and adequately revealed what happened in a Western Electric Plant at one time and in one place. However, this tells one little about the administration of a university or

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<sup>85</sup>Ernest Dale, The Great Organizers, McGraw-Hill Book Company, Inc., New York, 1960, pp. 7-12.

hospital. Of Herzberg's study in The Motivation to Work, it would accept the results relative to the 200 Pittsburg accountants and engineers but would question their applicability to west coast dock workers. In all fairness it must be recognized that Herzberg has expanded the universe in later studies, but the point is basically the same.

And finally, one further justification of this approach comes in the form of a renewed interest in international business organization. Only time will tell what type of limited applicability problems different cultures and mores will present.<sup>86</sup>

Does the variability of perception disqualify empiricism as an adequate epistemology for the science of management and organizations? And even more basic, what alternative is there that might be employed?

### Rationalism and the Theory of Organizations

The fundamental thesis of rationalism, to which school of philosophy the a priorists belong, is that the key to true knowledge is not by the evidence of sense but pure thought and logic. They argue as follows.<sup>87</sup>

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<sup>86</sup>Winston Oberg, "Cross-Cultural Perspectives on Management Principles," Academy of Management Journal, Vol. VI, No. 2 (June, 1963), p. 142.

<sup>87</sup>Kaufmann, op. cit., p. 10.

1. Logic is not subject to the illusions of sense.
2. Results of logical reasoning from "truth" statements are universally and eternally valid.
3. The only observations that are precise and intersubjectively valid are those that can be formulated in mathematical terms.

An epistemology founded on propositions such as these might be labeled the antithesis of empiricism. But, like empiricism, rationalistic philosophers can be seen to occupy a whole continuum, one extreme of which actually approaches empiricism.

The extreme anti-empiricists will be called "radical rationalists" or "extreme a priorists." Actually this group has an almost theological foundation in that they conceive the world as perfectly attributable to the order of a Divine Rational Being in Whose image human reason is created. Man, having been created in the image of God but lacking omnipotence, is capable of understanding only part of the rational plan.<sup>88</sup>

The impact and logic of the rationalistic or a priori position can be appreciated only when one recognizes what is actually being stated. Succinctly it is this: if one begins with certainty and following the rules of logic deduces valid

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<sup>88</sup>Ibid.

consequences, the consequences must be as certain as the axioms upon which they are based.<sup>89</sup> Therefore, a priorism is more abstract in its approach than empiricism. It moves from the general to the specific in direct opposition to empirical induction. However, for a mode of inquiry to be said to be abstract from raw experience, it need not be thought of as taking abstract entities as its objects.<sup>90</sup> In other words, there are no methodological reasons why explanations concerning the nature of "reality" cannot be approached deductively although the success of deduction is predetermined, to some extent, by the nature of its abstract premises.

On Ultimate Givens. This section proposes to examine the starting point of deductive reasoning. The point of departure may, for lack of a better term, be called a premise. A priorists have long claimed that economics and various other sciences are based upon certain fundamental truths which are not subject to empirical verification.<sup>91</sup> The argument

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<sup>89</sup>Rollo Handy, Methodology of the Behavioral Sciences, Charles C. Thomas, Publisher, Springfield, Ill., 1964, p. 25.

<sup>90</sup>Israel Scheffler, "Explanation, Prediction and Abstraction," British Journal of the Philosophy of Science, Vol. VIII, No. 28 (Feb., 1957), p. 309.

<sup>91</sup>For adequate support see Machlup, op. cit., p. 5, C. I. Lewis, Mind and the World Order, Scribner and Sons, New York, 1942, p. 293 and Arthur Pap, The A Priori in Physical Theory, King's Crown Press, New York, 1926, p. 5.



continues that new experience can only force one to modify or discard inferences drawn from previous experience. But experience cannot require discarding or extensive modification of a priori theorems which are not derived empirically; they are logically prior to sense observation and can neither be proved by corroborative experience nor disproved by experience to the contrary.<sup>92</sup> Contradictory observations can force reevaluation of the logic, but if the logic is not in err, it must be considered valid. But what is the nature of the undisputable a priori truth and how does one recognize such a truth when one sees it?

A priori truths are difficult to discuss from any point of view, but they are absolutely impossible to examine scientifically. The reason for this is, quite frankly, that these "truths" are irrational, by definition. However, they are not irrational in the sense that is commonly associated with abnormality; they are simply incapable of rational examination. They are the irrational starting point of the rational process and are prior to rationality, thus not rational. Because of the impossibility of a logical examination of these

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<sup>92</sup>Von Mises, Epistemological Problems of Economics, op. cit., p. 27.

irrational elements, some writers have chosen to call these truths "ultimate givens."

Science, in attempting to trace every event to its cause, acknowledges that there are limits to the human mind in search for knowledge. Specifically, it fully recognizes that certain phenomena cannot be traced to other phenomena. These are the ultimate givens.<sup>93</sup> Physical science can offer no scientific explanation as to the cosmic existence of the basic elements of which everything is composed. Yet, elements do exist, irrational (in the sense mentioned above) as they may be. All that can be said is that to deny their existence appears to the human mind as nonsense and that thinking based on such elements has led to satisfactory theories. "All man's actions are purposeful" is a proposition not subject to empirical verification since an overt action may appear as a  $S \rightarrow R$  pattern. Yet, purposeful behavior is a truism and psychological theories based upon it have proved satisfactory. Therefore, scientific inquiry cannot proceed beyond the limits drawn by the inefficiency of man's senses and the narrowness of his mind.<sup>94</sup> In fact, the human mind is not capable of conceiving a kind of knowledge not limited by an ultimate given inaccessible to

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<sup>93</sup>Von Mises, Human Action, op. cit., pp. 17-18.

<sup>94</sup>Von Mises, Theory and History, op. cit., pp. 8-9.

further analysis. Thus, the scientific method that safely escorts man to the ultimate givens is entirely rational, but the ultimate given can only be termed irrational.<sup>95</sup>

This, then, is the nature of the ultimate givens strongly supported by some and jokingly rejected by others. Assuming such a system, however, rather elaborate deductive formulations have been constructed.

Deductive Nature of the A Priori. The contemporary vogue in management and organization theory is empirical research. Of this there can be no question. Yet, the rationalists speak of empirical theories as little more than inductive generalizations or simple "correlational statements" and observed links among protocol data.<sup>96</sup> Data collection to them simply does not constitute a theoretical system. Some of these, while recognizing the importance of induction in physical analysis, reject the method when applied to the study of human behavior because of the unique characteristic of purposeful human action. Since a human may react to a stimulus one way at one time and in a different manner at another, inductive generalizations are approached with extreme skepticism.

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<sup>95</sup>Von Mises, Human Action, op. cit., pp. 20-21.

<sup>96</sup>Fritz Machlup, "Operationalism and Pure Theory in Economics," in Krupp, op. cit., p. 60.

Therefore, it is evident that the rationalistic or a priori approach is fundamentally deductive. It is a procedure that begins with a base of self-evident truths and applying the rules of logic obtains solutions or consequences of these truths that may be used in prediction. Now that the philosophical nature of this argument is understood, one most likely is asking himself questions concerning the origin of such an argument and is seeking a theory of organization that proceeds along such a route.

Historical Perspective. The basis for the empiricists' reaction against rationalism can be found in history. As Von Mises states, "Although there was a long line of utopians who drafted earthly paradises where pure reason was supreme, the real truth seekers never pretended reason would make man omnipotent."

Aristotle, in his Metaphysics, defines the striking importance and uniqueness of reason. Both men and animals have the abilities of perception and memory. Therefore, intelligence, defined as the ability to recognize similarity and difference as well as the ability to bring experience together in a manner so as to regulate behavior, is a possession of both man and beast. But man is capable of more than intelligence; only he is capable of reason or that ability which allows one to know why things operate as they

do. Rational knowledge is the knowledge of why things act as they do, not just the knowledge that things do operate. The practical function of such knowledge is the ability to anticipate experience--being able to foresee, and therefore, better able to consider the consequences of action before it is taken.<sup>97</sup>

Plato's idealism or "world of forms" would also be considered rationalistic. To Plato what is ultimately real is the "ideas" or forms beneath appearances which are immaterial entities not themselves existent in the world of sense perception. The idea, which is perfect, is the ultimate reality; whereas one's perception of it is not reality and is imperfect.<sup>98</sup>

In addition to Plato, Aristotle and St. Thomas Aquinas (1250 A.D.), the main stimulus to rationalism came from the philosophic thinkers of the 15th and 16th centuries. It came in the form of a reaction against the dictates pressed upon them by others whose logic could not be checked by their own faculties.<sup>99</sup> And more recently, a less general treatment comes from Kant in his Critique of Pure Reason. Kant distinguished between the "noumenon" or the unknowable thing itself

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<sup>97</sup>Marx W. Wartofsky, Conceptual Foundations of Scientific Thought, The Macmillian Company, New York, 1968, pp. 313.

<sup>98</sup>Ibid., pp. 86-87.

<sup>99</sup>Churchman and Ackoff, op. cit., pp. 14-17.

and the "phenomenon" or that which is known by virtue of transcendental unity of apperception.<sup>100</sup> His great lesson is that the flux of raw data would remain an unperceived process were it not for prior structuring according to certain categories of understanding which reify events on a space-time frame.<sup>101</sup> His a priori element of structuring signifies only that a conceptual framework is prior to experiencing an event.

But what about contemporary management theory? Are there examples of rationalism in its theoretical foundation?

Rationalistic Tradition in Management and Organizations.

The study of management and organizations is like many other sciences in that various theories have been developed using the rational as well as the empirical alternative. Herbert Simon has developed several primarily rational and completely deductive theories of executive compensation as well as group conformity and interaction.<sup>102</sup>

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<sup>100</sup>Turner, op. cit., p. 195.

<sup>101</sup>Ibid.

<sup>102</sup>See Herbert A. Simon, "Compensation of Executives," Sociometry, Vol. XX, No. 1 (March, 1957), pp. 32-35, "A Formal Theory of Interaction in Social Groups," American Sociological Review, Vol. XVII, No. 2 (April, 1952), pp. 202-211 and Herbert A. Simon and Harold Guetzkow, "A Model of Short and Long Run Mechanism Involved in Pressures Toward Uniformity in Groups," Psychological Review, Vol. LXII, No. 1 (Jan., 1955), pp. 56-68.

However, the most influential formulation which utilizes this method is Maslow's theory of motivation.<sup>103</sup> In its original and general formulation, it assumes the form of a rational theory. Initially, it makes several basic assumptions which could be considered quite self-evident.<sup>104</sup> These are the ultimate givens of Maslow's theory for which no empirical justification is required.

1. Man is a wanting animal--he always wants and wants more. (a priori true)
2. A satisfied need is not a motivator of behavior. (a priori true)
3. Man's needs are arranged in a series of levels--a hierarchy of importance. (a priori true)

From these three self-evident a priori truths a complex and extremely general (in the sense of wide applicability) theory may be developed. Maslow's theory is, at least, a moral victory for the rationalists since no theory in the social sciences, either empirical or rational, comes to the writer's mind as being influential.

It should also be noted that a great deal of current systems analysis is fundamentally deductive although it relies

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<sup>103</sup>A. H. Maslow, Motivation and Personality, Harper and Row, Publishers, New York, 1954, pp. 62-106.

<sup>104</sup>Herbert G. Hicks, The Management of Organizations, McGraw-Hill Book Company, New York, 1967, pp. 237-238.

heavily upon empirical studies for confirmation and verification. Why, then, is not the a priori rationalistic method the answer to all the methodological problems of the social and organizational sciences?

Limitations of Rationalism. Needless to say, the rationalists made a most respectable point of the limitations of empiricism in dealing with the variability of purposeful human action. Paradoxically, empiricism occupies a more "respectable" position today than does rationalism. It is the contention of the writer that the reason for the unpopularity of rationalism is a direct consequence of contemporary scientific skepticism. No science enjoys the intellectual status of mathematics, in spite of the fact that its foundations are completely a priori and its content absolutely abstract. No one can testify as to the existence of a Euclidian point (which has no magnitude) or line (with only length and no width) because man is unable to physically perceive such abstract concepts. If they are not capable of perception, they are certainly not capable of test. Although science can accept the logical perfection of mathematics, no other area of study has developed such precision. Therefore, the scientific community has been reluctant to accept any contention in social areas that cannot be supported by concrete empirical fact.



But why must an area in its methodological infancy such as management and organization theory, establish empirical verification as one of its scientific criteria? Surely methodological infancy imposes enough limitations without constructing and creating additional ones.

### Why An Epistemological Dichotomy?

As the general semantists have often pointed out, either-or reasoning has caused untold communication difficulties for man. Dichotomous thinking has been no less destructive in methodology. One cannot prevent wondering why a social-scientific investigation must either be empirical, in which case the rationalists disregard it; or purely rational, whereupon the empiricists reject it as unfounded "armchair philosophizing."

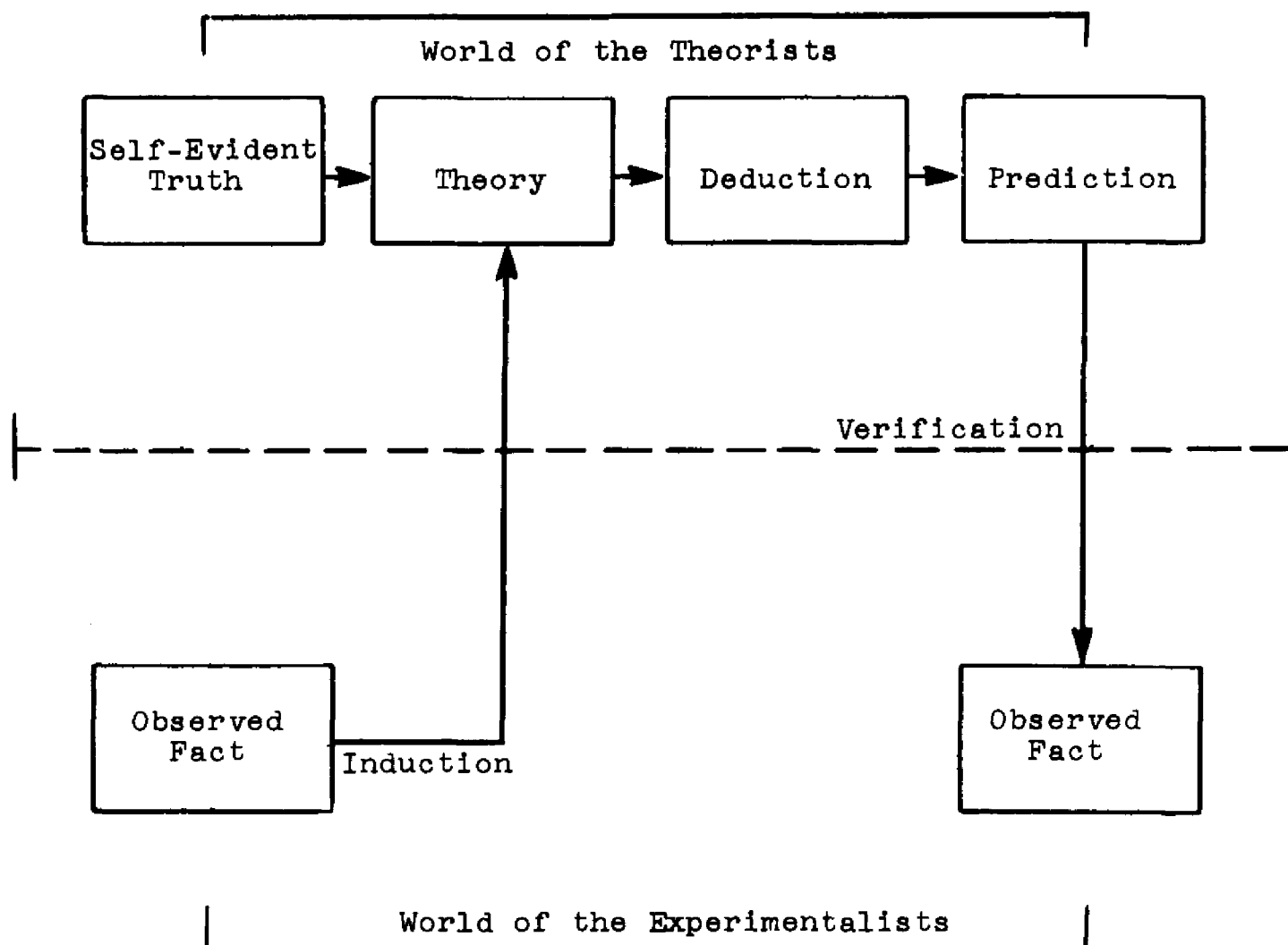
It seems almost too obvious to mention that both systematic reasoning and sense perception are capable of suggesting hypotheses to be examined. After the hypotheses are clearly defined it may become necessary to make certain assumptions for the purpose of simplicity or fundamental underlying premises may be suggested by actual observation of existing conditions. Based upon these premises, deductive reasoning may develop a systematic explanation of cause and effect relationship that logically results from the set of assumptions or axioms, or one may infer theoretical general-

izations from observed events. Once the theory becomes structured, observations of actual events provide a valuable check or test as to the validity of the theory. Obviously, certain premises such as those of Maslow's are not empirically verifiable, but the results of reasoning from such a postulation may be tested. Figure 7 illustrates this iterative nature of deductive and inductive methods.

This "iterative approach," as the writer has chosen to call it, may be traced to Galileo. It contends that a hypothesis is a rational idea or empirical fact to be tested by experience and rejected if it cannot stand the test. Such an argument is anti-rationalistic in that it does not accept the derivation of propositions from rational ideas as constituting final proof. However, it is rationalistic in that it recognizes reason as the guiding principle in making predictions. Thus, it is critical of sense unguided by reason and critical of reason unchecked by sense.<sup>105</sup> This approach utilizes induction modestly in the framing of scientific hypotheses, but makes it mandatory for their test. Fundamentally, it redefines science as reason tempered by observation and observation impregnated by thought; it is an

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<sup>105</sup>Kaufmann, op. cit., p. 10.



SOURCE: John G. Kemeny, A Philosopher Looks At Science, D. Van Nostrand Company, Princeton, 1959.

FIGURE 7

THE ITERATIVE NATURE OF DEDUCTION AND INDUCTION

orderly construction fitted to the world of the senses, an experimental search for a world of order.<sup>106</sup>

A bipolar orientation to epistemological alternatives is limiting to say the least. The value of the empirical and rationalistic approaches is a relative concept that may occupy almost any point along a continuum between the two. This statement does not contend, however, that the selection between them and the relative weights applied to each is arbitrary. Such a choice requires some of the most detailed analysis that the social scientist is called upon to accomplish. In making this choice, one will find that selection is a function of certain variables which are:

1. The nature of the subject matter. For instance, the fact that man's actions are purposeful complicates the formation of theories based on a few limited observations.
2. The specific topic under consideration. A study concerning the effect of rest periods on physical fatigue requires detailed observation. However, a theoretical question involving the psychic motivation of man might be examined quite successfully via deductive reasoning from "self-evident" truths.
3. The purpose of the study. If universal theories of organizations applicable to all forms is the stated purpose of an organizational science, deduction may be the most suitable method since

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<sup>106</sup>V. Edwin Bixenstine, "Empiricism in Latter-Day Behavioral Science," Science, Vol. CXLV, No. 8 (July 31, 1964), p. 467.

its results are more general. Empirical observations of specific cases raises questions concerning the applicability of any single empirical theory.

#### 4. Etc.

It must be noted that an emphatic etc. is included as the final element since there are numerous other situations that can influence one's exact position along the deductive-inductive scale.

The recommendation of methodological tolerance does not answer the traditional epistemological questions concerning the ultimate source of knowledge which has been discussed at length above. Obviously, there are no scientific answers to such questions; yet, after some deliberation, the author is prepared to venture an opinion which has been found to provide some personal satisfaction to this most frustrating issue. If the question is concerned with ultimate knowledge, it seems that the rationalists do indeed possess a theoretical victory since "observation unilluminated by reason is sterile."<sup>107</sup> It seems doubtful that anyone would equate science with the accumulation of data since it is the inherent logical structure of the mind of man that gives initial meaning to sense

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<sup>107</sup>Morris R. Cohen, *Reason and Nature*, 2nd ed., The Free Press, Glencoe, Ill., 1953, p. 17, Tjalling C. Koopmans, "Measurement Without Theory," *The Review of Economic Statistics*, Vol. XXIX, No. 3 (Aug., 1947), p. 164 and W. Stanley Jevons, *The Theory of Political Economy*, Kelley and Millman, Inc., New York, 1957, p. 22.

perceptions.

However, to expect scientific skepticism to accept unchallenged any theoretical report is equally erroneous. Even if reason does precede experience, it is experience that provides the test and determines validity for modern management and organization theory. In other words, the results or consequences of a deductive theory must coincide with observed reality in order to be scientifically meaningful. This conclusion applies only to the consequences of the theory, for the empirical validity of the assumptions upon which the theory is based is an entirely separate methodological question and will be discussed in the following section.

Now that a plea for a complementary rather than competitive relationship between induction and deduction has been made, an additional question comes to mind. If one accepts, as the writer does, the proposition that human action is fundamentally different from any other object of science, one is inclined to inquire into the possibility of the existence of methods more suited for the analysis of man.

#### Toward An Adequate Epistemology of Management and Organizations

Although criticized by Nagel, MacIver makes an interesting point in his book Social Causation when he states:

In the social realm the scientist enjoys the incomparable advantage of being immersed in the strivings, purposes and goals that constitute the peculiar dynamics of this area . . . We must supplement experiment and the "objective evidence" provided by the observable and measurable behavior by the admittedly precarious but valuable process of imaginatively reconstructing the hidden systems of thoughts, attitudes and desires to which causal efficacy is imputed.<sup>108</sup>

Other influential individuals have voiced similar ideas relating to this unique position of the social scientist.<sup>109</sup> As a result, scientist and philosopher alike have sought new methods and alterations in existing ones which would be more clearly associated with the uniqueness of the social sciences.

### The Logic of Verstehen

Referring once again to the datum labeled "ultimate givens" it may be seen that when the natural sciences encounter such data the logic of their methods is exhausted. Perhaps this is not true when one human being studies other human beings because of the simple fact that he himself is

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<sup>108</sup>Nagel, Logic Without Metaphysics, op. cit., p. 372.

<sup>109</sup>See Paul F. Lazarsfeld, "Philosophy of Science and Empirical Social Research," in Ernest Nagel, Patrick Suppes and Alfred Tarski, editors, Logic, Methodology and Philosophy of Science, Stanford University Press, Stanford, Calif., 1962, p. 473 and Frank H. Knight, Freedom and Reform: Essays in Economics and Social Philosophy, Harper and Brothers, New York, 1947, p. 224.

human. When knowledge is obtained via this process an act is performed which was described initially in German epistemology as das spezifische Verstehen der Geisteswissenschaften or simply Verstehen.<sup>110</sup> Verstehen means understanding, but it is a "specific type of understanding" possible only in the social sciences where the observer is a member of the same class as the observed. Therefore, Verstehen is the postulation of an intervening process located inside the human organism by means of which an observed event is made meaningful.<sup>111</sup> According to this, the reaction or response to any stimuli supposes the existence of mental determinants or intervening variables such as memory, expectations and desires.<sup>112</sup> The physicist need worry little about the conscious reactions of an aircraft to a wind current. Such an uninvolved relationship does not exist between the inter and intraorganizational relations of man.

Cognition from Within and Cognition from Without. Natural phenomena are approached from without. The result of such observations is the establishment of laws of dependence

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<sup>110</sup>Von Mises, Human Action, op. cit., pp. 49-50.

<sup>111</sup>Theodore Abel, "The Operation Called Verstehen," in Feigl and Brodbeck, op. cit., p. 682.

<sup>112</sup>Arthur Pap, An Introduction to the Philosophy of Science, The Free Press, Glencoe, Ill., 1962, p. 383.



by which one explains the phenomena of nature.<sup>113</sup> But in the social arena cognition comes from within since the observer is able to understand the meaning of an act to the actor. .

Although there is no specific example of such a process that can be drawn from organization theory, the writer is inclined to believe that any theory of organization, save a purely behavioristic one, makes use of Verstehen. Man simply is incapable of "understanding" the action of others without at least projecting himself to some extent. An attempt to understand human action in organizations by observing man's responses to various stimuli would result in an extremely limited understanding if understanding resulted at all. Imagine trying to explain interdepartmental conflict solely on the basis of the observed evidence of overt resentful acts and slowed intercommunication. Such a theory could provide only a description of effects with absolutely no explanation of causes. The predicament of the management and organization theorist is quite adequately expressed by Simon upon introducing a particular study.

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<sup>113</sup>Von Mises, Epistemological Problems of Economics, op. cit., p. 130.

Lacking the kinds of empirical knowledge of the decisional process that will be required for a definitive theory, the hard facts of the world, can enter the theory only in a relatively unsystematic way . . . but none of us are completely innocent of acquaintance with the gross characteristics of human choice . . . I shall feel free to call on this common experience as a source of hypothesis.<sup>114</sup>

Actually, the process by which Verstehen takes place or is accomplished is purely psychological and to a large extent quite structured. Briefly, then, an analysis of the process will be undertaken.

The Process. Verstehen consists of three steps.<sup>115</sup>

1. Internalizing of the stimulus. At this stage the observer attempts to describe a situation or event by categorizing it and evoking personal knowledge which fits into this category.
2. Internalizing the response. One infers the motive of the act from the known or observed modifications it produces.
3. Behavior maxims. Certain maxims link two feeling states together in a uniform sequence and implies a functional dependence between them. The functional dependence consists of the fact that the feeling state ascribed to a given human action is directed by the feeling state one presumes is evoked by an impinging situation or event. These maxims can be constructed ad hoc and be acceptable not because they are experimentally verifiable but because they are somewhat "intersubjectively self-evident."

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<sup>114</sup>Herbert A. Simon, "A Behavioral Model of Rational Choice," Quarterly Journal of Economics, Vol. LXIX, No. 1 (Feb., 1955), p. 100.

<sup>115</sup>Abel, op. cit., pp. 683-684.

Obviously, Verstehen is a product of the SCIENCE<sub>social</sub> rather than the SCIENCE<sub>natural</sub>. If, however, it is not purely "scientific" in the SCIENCE<sub>natural</sub> sense, what possible function does it perform? An example will be used to illustrate its usefulness.

Suppose that stimulus  $S_x$  has resulted in three different responses  $R_1$ ,  $R_2$  and  $R_3$  with equal regularity and several other responses ( $\dots R_n$ ) have occasionally occurred. If  $H_i$  is used to designate the hypotheses which postulate a causal relationship between  $S_x$  and the various  $R_i$ , one can see that the probability of any given mutually exclusive hypothesis being confirmed is:

$$P(H_1) = P(H_2) = P(H_3) \text{ and } \sum_{i=1}^{n=3} P(H_i) < 1$$

$$\text{where } 1 - \sum_{i=1}^{n=3} P(H_i) = \text{uncertainty}$$

Uncertainty must be considered since the set of responses ( $R_1$ ,  $R_2$ ,  $R_3$ ) is not collectively exhaustive of all possible responses. A behavioristic description can only take the  $R_i$  that actually occurred and relate it to  $S_x$ . However, Verstehen offers not only an explanation of why a given  $R_i$  took place but is fully capable of recognizing the possibility of other  $R_i$ 's and may even provide subjective probabilities as to their likelihood. Thus, Verstehen appears,

from the viewpoint of SCIENCE<sub>social</sub>, to be much more fruitful than pure behaviorism. As one would expect, however, Verstehen has not received universal acceptance.

Criticisms of Verstehen. Criticisms have been directed toward Verstehen on several counts ranging from charges of its ascientific subjectivity to referring to it as nothing more than empathy. As for the ascientific argument, there is little question as to its justification.<sup>116</sup> Certainly, if publicly testable data is the necessary condition for science then Verstehen is ascientific. But this argument equates ascientific methods and subjectivity and requires that the validity of the argument rest upon the definition of subjectivity. The opponents of Verstehen say it is subjective because the understanding of another person's action depends upon private, uncontrollable and unverifiable intuition on the part of the observer. However, Weber, et. al., admit it is subjective only in the sense that its goal is to find what the observee "means" in his actions, in contrast to the meaning which the action has for the observer.<sup>117</sup>

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<sup>116</sup>Arthur C. Danto, "On Explanation in History," Philosophy of Science, Vol. XXIII, No. 1 (Jan., 1956), p. 18 and H. M. Blalock, Jr., "Theory, Measurement and Replication in Social Sciences," The American Journal of Sociology, Vol. LXVI, No. 4 (Jan., 1961), pp. 343-345.

<sup>117</sup>Schutz, op. cit., p. 240.

In the latter sense Verstehen is simply an alternative epistemological position, not a subjective interpretation. Therefore, its ascientific character refers only to its relationship with SCIENCE<sub>natural</sub>. Recognizing, however, the impossibility of complete SCIENTIFIC<sub>natural</sub> analysis of purposeful behavior, Verstehen offers an improvement upon a purely behavioristic analysis of man.

The proposition that Verstehen is nothing more than empathy is also a matter of definition. It seems, at least to the writer and others,<sup>118</sup> that empathy and understanding are two different things. It is one thing to understand the psychic motivation of a factory owner in early America, but it is quite another to appreciate or empathize with the "sweat shops" he created. Thus, there is a fundamental difference between understanding and approval as is quite obvious from the above statement.

Verstehen offers to the theorists of management and organizations an alternative to the purely scientific methods which have been so successful in physical analysis, but leave much to be desired in dealing with the unique characteristics of the purposeful behavior. However, one would commit the "fallacy of epistemological dichotomy" to advocate Verstehen

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<sup>118</sup>Von Mises, Human Action, op. cit., p. 50.

as a sole methodology; yet, its use in the formulation of testable hypotheses should not be discounted. The insight such a method gives lends dynamic meaning to observed responses and removes the "shell of uncertainty" around many, because only man can understand man.

### On Ideal Types

Regardless of the actual method one might select for the analysis of socio-scientific data, more often than not one is faced with more variables than desired. As a result, something is needed to enable the social scientist to concentrate on the more important determinants of effects.

One particular method of concentrating on a limited number of variables is known as the "theory of ideal types" and was advocated enthusiastically by Max Weber. Weber states:

An ideal type is developed through the one-sided intensification of one or several aspects by integrating them into an immanently consistent conceptual representation of a multiplicity of scattered and discrete individual phenomena.<sup>119</sup>

Ideal types are used to simplify complex situations. They are especially useful in detecting and abstracting specific

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<sup>119</sup>Von Mises, Epistemological Problems of Economics, op. cit., p. 76.

characteristics from a complex whole and organizing them into a coherent scheme.<sup>120</sup> In addition, they may be used to place hypothetical rational actors in some simplified situation so that the consequences of their action may be deducted. Therefore, the fundamental purpose of an ideal type is to develop skills in logical research and to assist in the construction of hypotheses by noting how the main forces act upon a given situation.<sup>121</sup> Although few recognize it, Verstehen and ideal types are quite complementary. As a matter of fact, Verstehen assumes that human action displays certain typical patterns so that the meaning an "actor" attaches to an action can be understood by the observer. Thus, it assumes an intersubjective character of commonsense knowledge.

But what exactly does the construction of "ideal types" accomplish? Specifically, it allows three things.<sup>122</sup>

1. The arrangement of ideal types makes possible the analysis of standardized behavior in isolation. That is to say, certain factors such as social norms or rationality may be analyzed within a logical framework.

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<sup>120</sup>J. W. N. Watkins, "Ideal Types and Historical Explanations," in Feigl and Brodbeck, op. cit., pp. 732-733.

<sup>121</sup>Carl G. Hempel, "Typological Methods in the Social Sciences," and Max Weber, "Objectivity in Social Science and Social Policy," in Feigl and Brodbeck, op. cit., pp. 219 and 396.

<sup>122</sup>Nagel, "Problems of Concept and Theory Formation in Social Science," op. cit., p. 209.

2. It becomes a device for ascertaining deviating behavior in the real social world. In other words, the ideal may be used as a norm from which reality deviates and toward the accomplishment of which managerial action is directed.
3. By varying certain elements numerous rational models may be constructed and compared. In doing this, one can vary or rotate the dominant factor and deductively ascertain the consequences.
4. In addition to the three noted above, the writer thinks an additional factor should be mentioned. An ideal type may provide the framework for a more general theory of management. Any general theory must be abstract because the more closely it approximates a specific situation the less applicable it is to many varying circumstances.

Thus, ideal types are an effort to develop a more consistent and complete scientific system. Obviously, scientific systems are never complete in that the door always remains open to test so that no absolute scientific knowledge is possible. By constructing an ideal type, however, the scientist, whether he be economist or organization theorist, is able to insure the internal consistency of his logic and improve his understanding of the subject matter.

Unfortunately, a theory may be internally consistent and false which creates special problems of its own. In other words, how realistic are ideal types?

Ideals and Reality. The construction of a representative ideal to describe an event is essentially a search for



"limiting or strategic factors"<sup>123</sup> which are the primary determinants of the observed phenomena. There is, therefore, a most important question concerning how closely an ideal must approach reality in order to be considered a valid representation of the observed event. Weber maintained that ideal types cannot be defined as genus proximum or differentia specifica and that concrete cases cannot be subsumed under them as instances.<sup>124</sup> They are purely mental constructs which have no counterpart in reality. They are a type of utopia that simplifies analysis. To consider them as real is to be guilty of the "fallacy of misplaced concreteness,"<sup>125</sup> that is, the identification of theoretical constructs as purely perceivable occurrences. Ideal types are specifically designed to abstract certain elements from a set of "all" possible elements, therefore, a perfect description of reality via this method is impossible, by definition.

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<sup>123</sup>Chester I. Barnard, "The Environment of Decision," in Harold Koontz and Cyril O'Donnell, editors, Management: A Book of Readings, McGraw-Hill Book Company, Inc., 1964, pp. 85-86.

<sup>124</sup>Hempel, op. cit., p. 211.

<sup>125</sup>Sherman Roy Krupp, "Theoretical Explanation and the Nature of the Firm," The Western Economics Journal, Vol. I, No. 3 (Summer, 1963), p. 204.

In view of this, explanation by way of an ideal type will at best define a range of phenomena that may result in a given situation; thus establishing an "applicability" theorem.<sup>126</sup> The applicability theorem, by virtue of its delineation of the range of possibilities, eliminates many things which are logically impossible under the established conditions. Therefore, ideal types are not exhaustive descriptions of reality and if they were, their complexity would offer no theoretical improvement over the analysis of dynamic reality itself.

Ideal Types and Organizations. Herbert Simon, after denying the ideal economic man of classical theory, replaces it with an ideal satisficing model while Likert emphasizes:

. . . in working situations a wide variety of motivational forces influence the behavior of man. However, in developing an integrated theory of management it is necessary to use primarily one assumption as to the character of the most pervasive motivational force affecting human behavior in working situations.<sup>127</sup>

But perhaps the best example of an ideal type in management and organizations is provided by Douglas McGregor's Theory X and Theory Y. Initially, McGregor criticizes an

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<sup>126</sup>Martin Bronfenbrenner, "A Middlebrow Introduction to Economic Methodology," in Krupp, The Structure of Economic Science, op. cit., p. 10.

<sup>127</sup>Renis Likert, "A Psychological Foundation for a Modified Theory of Management," Acta Psychologica, Vol. XI, No. 1 (1955), p. 171.

"ideal type" based on the following assumptions about industrial man.<sup>128</sup>

1. The average human being has an inherent dislike of work and will avoid it if he can.
2. Because man dislikes work he must be coerced, controlled, directed and threatened with punishment to get him to work toward organizational objectives.
3. The average human being prefers to be directed, wishes to avoid responsibility, has little ambition and desires security above all.

Based on this ideal construction, classical theory created many dysfunctional situations. As an alternative, McGregor offers an ideal which assumes:<sup>129</sup>

1. The expenditure of physical and mental effort in work is as natural as play or rest.
2. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
3. Commitment to objectives is a function of the rewards associated with their achievement.
4. The average human being learns, under proper conditions, not only to accept but to seek responsibility.
5. Creative ability is widely, not narrowly, distributed in the population.
6. Under modern industrial life, the intellectual potentials of the average human being are only partially utilized.

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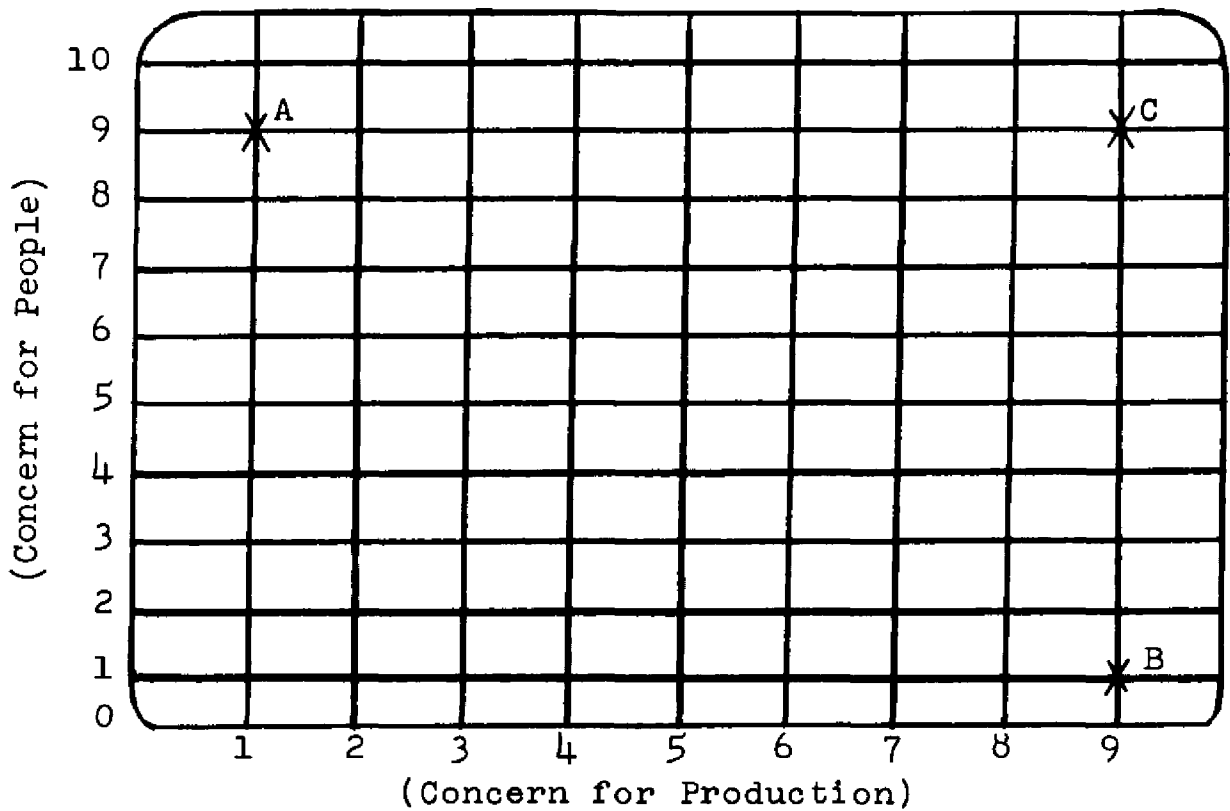
<sup>128</sup> Douglas McGregor, The Human Side of Enterprise, McGraw-Hill Book Company, Inc., New York, 1960, pp. 32-44.

<sup>129</sup> Ibid., pp. 47-57.

It is obvious that neither set of extreme assumptions truly describe man in reality. However, either set can be used, within certain limits of applicability, to predict the result of various managerial behavior.

Therefore, in using ideal types if one allows "I" to be the ideal, phenomenon "a" cannot be said to be either "I = a" or "I  $\neq$  a." It can only be "more or less I." But to be "scientific," there must be objective criteria for the "more or less" comparison which may be either purely comparative (ordinal) or numerical (cardinal). Thus, any given situation in industry may be described as more Theory X or more Theory Y, but never situation a = Theory X or a = Theory Y.

The "Managerial Grid" in Figure 8 offers a convenient means of illustrating this "more or less" comparison. If the management of a hypothetical firm is described by point A with coordinates (1,9), they may be said to over subscribe to Theory Y and create a "country club" environment. On the other hand, a management team located at B (9,1) might be too much Theory X and practice task management or mechanistic manipulation. As in many cases the most desirable situation is neither extreme but some point which displays characteristics of each, such as C (9,9) where the management is both people



SOURCE: From Robert R. Blake, Jane Srygley Mouton and Alvin C. Bidwell, "Managerial Grid," Advanced Management Office Executive, September, 1962, p. 13.

FIGURE 8  
THE MANAGERIAL GRID

and production oriented.<sup>130</sup>

Limitations of Utopia. Nagel argues against any form of intuitive understanding such as the logical model based on "intuitive" premises.<sup>131</sup> His primary objection seems to be a plea for more empirical content in the assumptions of the ideal types.

Essentially, such objections attempt to make clear the distinction between argumentative validity and "truth" since it is quite possible for an argument to be valid (internally consistent) yet empirically untrue (as it relates ex post to reality).<sup>132</sup> Argumentative validity is nothing more than a consistent relationship between premise(s) and conclusion. The following syllogism is a perfect example of this situation.

All men are motivated solely by money. (Premise)

All employees of Organization X are men. (Premise)

All employees of Organization X are motivated solely  
by money. (Conclusion)

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<sup>130</sup>Hicks, The Management of Organizations, op. cit., p. 335.

<sup>131</sup>Schutz, "Concept and Theory Formation in the Social Sciences," op. cit., p. 233.

<sup>132</sup>David K. Berlo, The Process of Communication, Holt, Rinehart and Winston, New York, 1960, p. 239.

Thus, the argument progresses quite validly from premise(s) to conclusion, and is, therefore, argumentatively valid; yet, one has every reason to suppose that the conclusion is untrue based on empirical evidence. An interesting characteristic of this type of syllogism is that if the premises are true and the argument logically valid, the conclusion must be true.

All men are mortal. (Premise)

All members of Organization X are men. (Premise)

All members of Organization X are mortal. (Conclusion)

In a sense, the case of the ideal type appears somewhat at variation with "truth" if its assumptions are not empirically valid, thus bringing up another question. Is it possible for a conclusion to be considered useful if its conclusions approach reality but its premises are untrue or void of empirical content?

#### Homo Oeconomicus and Ceteris Paraibus: Comments on Assumptions

Classical management and organization theory has been criticized on the basis of its economic man (homo oeconomicus) assumption. Usually the criticism consists of a detailed proof of the nonexistence of such a creature followed by an advocacy of an equally unreal alternative.

In addition to the economic man assumption, almost every social science has faced ridicule for its use of a ceteris

paribus clause (all other things equal) made necessary by the complexity of social data. In view of this, it would seem beneficial for social theory to reexamine its traditional position to insure that the use of such assumptions is entirely necessary.

The Pragmatic Tradition. It was illustrated in an earlier section that the ultra-empiricists maintain the necessity of independent empirical verifiability of assumptions, theory and consequences.

However, one group of scholars often called the "Chicago School" rejects this empirical requirement with respect to assumptions altogether. To them the only test of the validity of a theory is how well it predicts.<sup>133</sup>

The pragmatic position is established as separate from the empiricist in that it requires no test of the assumptions; yet, it cannot be termed a priori because it strongly advocates the empirical testing of conclusions. Therefore, the ideal type finds a champion in the pragmatic philosophy, whereas those who require that theories have 1) empirical reference, 2) logical interconnection, and 3) admission of possibility

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<sup>133</sup>Milton Friedman, Essays in Positive Economics, The University of Chicago Press, Chicago, 1953, pp. 12-13.



of rejection<sup>134</sup> must obviously reject the theoretical establishment of ideal types on points one and three.

No doubt many may find the position of the pragmatists questionable since its logical extreme is "no matter how unrealistic the assumptions may be, if it enables useful predictions, the theory is valid." However, one should recognize that assumptions are abstractions by definition and must always lack empirical justification to a greater or lesser extent.<sup>135</sup> In spite of this, those who attack on the basis of assumptions rather than the predictability are not difficult to find. Some members of this group actually admit that various theories would result in essentially the same conclusions if empirically verifiable assumptions were used. If this be true, one is tempted to sympathize with the pragmatists and ask why it is necessary to shoulder the expense and trouble of empirical verification when the results are the same without it. And even more fundamentally, one might ask if empirical verification is the only test of realism?

Criteria of Unrealism. Nagel argues that unrealism of

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<sup>134</sup>Rubenstein and Haberstroh, op. cit., pp. 16-18.

<sup>135</sup>Edward A. Shils and Henry A. Finch, translators and editors, Max Weber On the Methodology of the Social Sciences, The Free Press, Glencoe, Ill., 1949, pp. 44-45.

assumptions can assume one or more forms.<sup>136</sup> They may be:

1. Unrealistic because they are not an "exhaustive description of reality" or designed for the "ideal case."
2. Unrealistic in that they are false or highly improbable based on the existing evidence available concerning the subject matter.

With reference to the first, the tenets of general semantics and intellectual commonsense tell one that any statement is unrealistic in the sense that it is not an exhaustive description of reality. Words can never say "all" there is about any objective process or event in the "real world." Whereas the above discussion has shown that ideal cases are not exact reproductions of reality, they are far from meaningless. In fact, as long as one remains fully cognizant of the fact that one is dealing with an ideal case, they may prove quite useful in analyzing complex situations.

To this point Nagel does no serious damage to the pragmatic tradition. However, he finds it impossible to accept an assumption which is counter to empirical evidence although he does at times seem somewhat sympathetic with Friedman's position on this point. Thus, Nagel occupies the middle ground between dogmatic ultra-empiricism and dogmatic

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<sup>136</sup>Ernest Nagel, "Assumptions in Economic Theory," American Economic Review, Papers and Proceedings, Vol. LIII, No. 2 (May, 1963), pp. 214-216.

pragmatism at the other.

One thing appears certain, however, the more general the theory the less realistic are the assumptions because generality requires that a theory specifically describe no particular case. McGregor's Theory Y is general because no specific man is categorized by its assumptions. Maslow's need hierarchy applies to many cases simply because it describes no particular man's set of needs. Thus, a significant theory explains much by little. A theory consists of an assertion that certain forces are, by implication, important and others are not for a particular class of phenomena. Therefore, in speaking of the "crucial assumptions" one is trying to state the key elements in an abstract theory.<sup>137</sup>

Thus, it seems that the criteria of unrealism is a function of one's objective. The avowed pragmatist is perfectly correct in proclaiming that the empirical reality of the assumptions is irrelevant as long as the theory derived from them provides a sufficient degree of predictive accuracy. His objective is practice and predictive validity is what he seeks. To the pure scientist, however, a theory is more than a tool for prediction. It is a work of logical beauty which aims

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<sup>137</sup>Friedman, op. cit., pp. 24-26.

at the systematic perfection of universally acceptable knowledge. As a result, predictive validity for practice is not his sole objective. For the scientist of management and organizations a choice is available; will he be content with supplying the practitioner with a tool for prediction or does he aim at a completely perfect logical science. The first alternative gives him a general (once again meaning wide applicability) yet imperfect description of many situations while the second gives him a more perfect description of a few limited cases. This is basically the choice that Ernest Dale's "comparative approach" offers. But such a question as this can only be answered from the viewpoint of the individual theorists considering their personal objectives and the conditions under which they work.

One thing appears quite clear in the writer's opinion: if a "general theory" is the objective of management and organization theory, empirical equality of assumptions, theory and consequences does not provide a satisfactory basis for such a formulation. The results of  $A = B = C$  can only provide a series of "comparative theories" exhaustively descriptive of specific cases but universally applicable to none.

Some Examples. Perhaps the best known and most often criticized assumption of management theory found its inception

in economics and was used extensively in classical theory. This, as mentioned before, was the idea that man 1) knows all the choices available to him, 2) considers the result of the alternative consequences of choosing various courses of action, and 3) has a complete utility ordering (cardinal) for all possible sets of consequences.<sup>138</sup> Taylor, et. al., in developing their theory obviously considered that the economic motives were the most important motivators of man. It is on the basis of this assumption that many have attacked scientific management. It hardly seems necessary to underscore the "unrealism" of this proposition, but from a pragmatic viewpoint this is completely irrelevant. Within this framework only the consequences of classical theory need be examined. If the theory enables sufficiently accurate predictions, good for it. If not, it should be rejected, not because its assumptions are unrealistic, but because the theory itself provides unsatisfactory predictive results.

Another assumption that has been used explicitly in economics and often implicitly in management and organization theory is the condition of ceteris paribus. This is a convenient means of analyzing the effects of a change in a

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<sup>138</sup> March and Simon, op. cit., p. 138.

given variable while holding all other influencing forces constant. In other words, ceteris paribus enables one to clear away the complexities of a multi-variable situation so that a greater insight may be obtained.<sup>139</sup> The assumption is obviously a complement to the theory of ideal types. It is important to note that ceteris paribus is not an absolute concept. The holding constant of all variables other than the one under consideration does not mean that others show no change at all. It simply means that the sum total of their change is not significantly large to constitute an influencing force. As Grunberg has shown:<sup>140</sup> let  $P_t$  be the value of variable  $P$  at time  $t$ ;  $P_{t+1}$  then is the value of  $P$  actually observed at  $t + 1$ ; if  $X_i$  is the  $i$ th variable in an infinitely large set of irrelevant variables covered by ceteris paribus, effective fulfillment of the clause means:

$$(\partial P_{t+1}/\partial X_1)dX_1 + (\partial P_{t+1}/\partial X_2)dX_2 + \dots (\partial P_{t+1}/\partial X_n)dX_n \leq e$$

where  $e$  is an arbitrary variable such that if

$$P_t - e \leq P_{t+1} \leq P_t + e$$

the prediction is accepted as sufficiently accurate.

With the current emphasis on total and partial systems analysis, it will no doubt be necessary for management and

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<sup>139</sup>James M. Buchanan, "Ceteris Paribus: Some Notes on Methodology," The Southern Economic Journal, Vol. XXIV, No. 3 (Jan., 1958), p. 269.

<sup>140</sup>Grunberg, op. cit., p. 151.

organization theory to rely more heavily on the explicit use of ceteris paribus. Theorists will find it impossible to analyze the composition and operation of the technical or power subsystems of a formal organization without assuming away or holding constant the influence of other subsystems. The limitations of man and the tools available for analysis make such measures absolutely mandatory. In doing so, no serious problems will be encountered so long as there is a conscious awareness of the limitations of such an analysis and management theorists do not fall prey to the "fallacy of mistaken concreteness."

#### Summary

This chapter has embarked upon a rather ambitious journey in quest of explanations relative to the epistemological foundations of management and organizations. The verbal travels have led to an examination of several diverse yet strategically interrelated topics. Succinctly, the major propositions advanced may be itemized as follows:

1. Management belongs to the SCIENCES<sub>social</sub> rather than the SCIENCES<sub>natural</sub>. By virtue of this association, the study of organizations faces several unique problems not adapted to the methods of physical science. The primary unique problem emerges as the purposeful behavior of man which distinguishes him from any other cosmic object.

2. The basic problems of any "SCIENCE," management and organizations being no exception, are epistemological in that they deal with the relationship between perceived and objective reality. Two opposing schools of philosophy have offered explanations of this relationship. The epistemological monists argue that objective reality and the knowing state are identical, item for item. True to the tenets of general semantics, this study has concluded that an alternative argument known as epistemological dualism is more productive of realistic knowledge. This philosophy contends that perception abstracts only certain items from objective being, thus denying the possibility of perfect knowledge.
3. Subclassified under dualism are two additional epistemological positions. Although they exist on a separate plane, they apply only to the most accurate methods of obtaining knowledge. The first position, known as empiricism, maintains that only knowledge capable of perception is valid. Within organizations, the works of Herzberg, Likert and Cyert exhibit excellent examples of such a philosophy. The alternative position may be referred to as rationalism and contends that there are basic a priori truths concerning human behavior which, although true, are not subject to empirical verification. Whereas the empirical method moves from the specific to the general (induction), the rational method moves from the general to the specific (deduction). The general solution to this issue seems to be that both methods are necessary in the "scientific cycle."
4. The two methods mentioned above (induction and deduction) are the only logically valid epistemological processes. However, the writer maintains that certain alterations may be made in them to facilitate their applicability to social problems without destroying their scientific usefulness. The primary alternative suggested is the use of Verstehen or the person to person understanding made possible by the fact that both the observer and observee in the social realm are human beings. This method should provide a great deal of insight into the formulation of hypotheses and the explanation of phenomena. Through the use of this methodology the observer is better able to understand the meaning an actor attaches to his action.



5. Finally, it is suggested that an appreciation of the usefulness of Verstehen could allow more productive use of ideal types. Since general semantics adequately illustrates the utter impossibility of knowing all there is to know about any event, the delineation of the most important factors and a concentration of effort upon them would be advantageous. Thus, the advocated methodology would consist of several steps: a) the delineation of important factors at work in the given problem by way of subjective agreement, b) logical deductions from the assumptions and premises established via (a), c) empirical test of the consequences of the logical process, d) expansion of the logical system by establishing the results as a norm and noting the alterations resulting from the inclusion of factors originally held constant in (a).

The above process is applicable to SCIENCE<sub>social</sub> not SCIENCE<sub>natural</sub>, and it is believed by the writer that such a method would obtain more productive results than are presently evidenced. Specifically, it would overcome many of the difficulties inherent in the either-or orientation of either induction or deduction.

Numerous variations may be used, as others have shown; but if a "general theory" is the goal of the science of management and organizations, strict empiricism appears inadequate for the accomplishment of the desired end. Only an elaborate deductive-inductive system based on trans-perceptual truths, developed within a logically structured framework and checked by empirical fact can provide such a theory.

## CHAPTER III

### SYNTHESIS AND EXPANSION: INQUIRIES INTO VALUE JUDGMENTS AND ABSTRACTION

Vague and insignificant forms of speech, and abuse of language, have so long passed for mysteries of science; and hard or misapplied words with little or no meaning have, by prescription, such a right to be mistaken for deep learning and height of speculation, that it will not be easy to persuade either those who speak or those who hear them, that they are but covers of ignorance and a hindrance to true knowledge.

--John Locke

Chapter two dealt with various philosophical issues in management and organizations; however, social theory possesses another dimension which might be referred to as the "practical plane." At this level there exists certain communication problems which result, in part, from the dynamic nature of the subject matter itself. Revolutionary changes have taken place in the past three-quarters of a century. The experiments of Frederick Taylor at Midvale Steel bear little resemblance to the sophisticated systems analysis of today. This increased complexity has all but created a crisis of communication for students of management. Just as Newton was obliged to develop intergal calculus in order to explain gravitation, management and organization theorists are confronted with obsolete communicative concepts which prevent an adequate

analysis of their subject.<sup>1</sup> Although it is doubtful that extensive modifications of the magnitude of Newton's are necessary, one is inclined to suggest at least some fundamental alterations in the dissemination of knowledge within the field of management.

For this reason, it becomes necessary to examine a few theoretical questions in order to grasp the full relationship between general semantics and the philosophy of science. But first, for reasons that will become obvious later, the assumptions of the chapter at hand must be made explicit. They are:

1. Science aims at the accomplishment of systematic transperceptual knowledge.
2. Science remains receptive to any suggestions that meet its general criteria and offer improvements over existing methods.

Recognizing these assumptions and the objectives of the present chapter, the first step is to examine the nature of the language of science.

### The Language of Science

Inseparably bound in epistemological questions is the

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<sup>1</sup>Stuart Chase, The Power of Words, Harcourt, Brace and Company, New York, 1954, pp. 111-112.

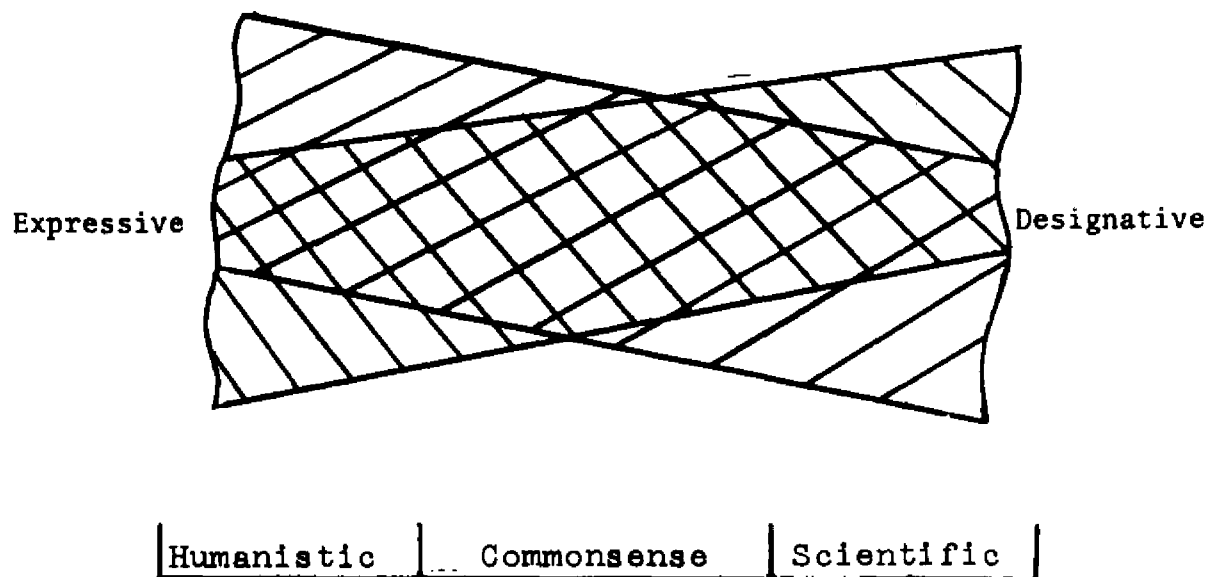
associated issue of language's relation to reality.<sup>2</sup> Science cannot be content with the mere recognition that the symbolic report of an experiment is a triadic alliance between object, thought and symbol. It has been the objective of the scientific enterprise to develop the most precise language possible to facilitate the accuracy of its reports. Mathematics stands alone as the most successful of such attempts. However perfect it may be, mathematics itself faces limitations which can be overcome only through the frequent use of less perfect, yet more expressive collections of symbols. Mathematics plus these expanded symbolic systems constitute the language of science.

Basically, this combination may be designated as a subset of any total language scheme, because it is more restrictive than language in toto. Figure 9 should aid in explaining and illustrating this distinction. As some philosophers argue, scientific language is cognitive and performs an informational function, whereas non-scientific or humanistic language is non-cognitive containing only an emotional appeal.<sup>3</sup> This

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<sup>2</sup>Peter Winch, "Philosophical Bearings," in Maurice Natanson, editor, Philosophy of the Social Sciences, Random House, New York, 1963, p. 109.

<sup>3</sup>W. T. Jones, The Sciences and the Humanities, The University of California Press, Berkely, Calif., 1965, pp. 152-153.



NOTE: Diagram adapted from W. T. Jones, The Sciences and the Humanities, University of California, Berkely, 1965, p. 153.

FIGURE 9

THE LANGUAGE OF SCIENCE

suggests a continuum ranging from highly scientific, consisting primarily of designative symbols with a limited number of expressive components, to humanistic, containing a relatively low percentage of descriptive elements and numerous expressive ones. In the middle is a compromise or "commonsense" language where designative equals expressive elements. The entire scale is language but only the right side is the language of science.

For an example of this idea, examine the proposition: "the organization reveals the dynamics of a budding flower." This statement is emotive and non-cognitive. Even the expert scholar of organizations would be forced to call freely upon imagination to grasp the significance of such an assertion. As a result, it would lie on the left-hand portion of the scale where the extreme is typified by vague terms displaying a propensity for beauty rather than utility. Socrates via Plato in the Apology places the poets at this extreme when he states:

They showed me in an instance that not by wisdom do poets write, but by a sort of genius and inspiration. They are like diviners or soothsayers, who also say many fine things but do not understand the meaning of them.<sup>4</sup>

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<sup>4</sup>John G. Kememy, A Philosopher Looks at Science, D. Van Nostrand Company, Princeton, N. J., 1959, p. 7.

Vague language is necessary to the poet, but it is not equally valuable to the scientist. The use of such a symbolic system would reduce the logical precision of science to meaningless rubble.

Alternatively, the proposition, "the organization is dynamic" falls more to the right-hand side of the continuum, because it can be subjected to the tests of logic and observation. It seems that organizational dynamics is a function of certain variables such as management and owner attitudes, adaptability and longevity. These factors may be tested directly or elaborate ex post examination of their effects may be conducted. Therefore, in spite of the fact that both humanistic and scientific languages use identical symbolic codes, the manner in which each uses it distinguishes them as subsets of language proper. Thus, the epistemological arguments of the previous chapter require a specific type of formulation which has itself become a source of controversy.

#### A Posteriori and A Priori Statements

Rational arguments are formulated in terms of "analytical" statements. These statements have a rather simple subject-predicate structure and for this reason are often referred to as S-P sentences. The distinguishing feature of these formulations is that the predicate follows logically from the definition of the subject so that the truth of the

statement relies in no way upon experience.<sup>5</sup> An example of this type of proposition is: "a business organization is a collection of individuals." By virtue of the customary usage of the term "organization," the collection of individuals characteristic could be assumed. If the subject of the sentence were not a collection of individuals, it would not have been labeled an organization.

On the other hand, "synthetic" statements are those in which the predicate is extraneous to the definition of the subject.<sup>6</sup> Take for example the proposition, "Herzberg's theory was confirmed by Z Corporation's experiment." In this case, there is no logically necessary connection between Herzberg's theory and the Z Corporation's experiment. The relationship is an account of specific experience; and for this reason, it might be labeled an empirical statement. Thus, a statement may be a priori, in which case its truth is not contingent on experience, or a posteriori whereupon it is.

Some would argue that analytical propositions only make explicit those meanings that have been conveniently assigned

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<sup>5</sup>Merle B. Turner, Philosophy and the Science of Behavior, Appleton-Century-Crofts, Inc., New York, 1967, pp. 49-50.

<sup>6</sup>Ibid.



to words and symbols.<sup>7</sup> In short, no new knowledge is expounded because the contents of the statements are known prior to their formulation. At best, they can make implicit meanings explicit--never more. To this group, only theories based on synthetic propositions and subject to empirical tests have scientific significance.

The a priorists counter by asserting that the laws of logic are more than rules in that they describe the structure of the world. Therefore, logical deduction does result in new knowledge because it is the dynamic procedure of the universe itself. They see no methodological problems in moving deductively from the known to the unknown, because their procedure for doing so is the route along which reality progresses.

Using a little imagination, one may recognize that the arguments on the "practical plane" are essentially the same as those in process at the "philosophical" level. The identical fundamental question must be answered: Are the phenomena of social affairs logical so as to make possible a purely deductive social theory? Certain theoretical conceptualizations,

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<sup>7</sup>Arthur Pap, An Introduction to the Philosophy of Science, The Free Press, Glencoe, Ill., 1962, p. 79 and Semantics and Necessary Truth, Yale University Press, New Haven, Conn., 1958, p. v.

such as the theory of consumer behavior in microeconomics, suggest an affirmative reply. This theory, constructed upon the relatively simple assumption of utility maximization, diminishing marginal utility and the possibility of preference ordering, has proved quite informative and theoretically valid. These assumptions are essentially the ones used to develop the rational choice model in chapter two which illustrates their applicability to organization theory. Therefore, in the writer's opinion, analytical statements of a priori truths can accomplish more than merely making the implicit, explicit.

The advisability of looking to these statements as the foundation of all theories, however, is not to be implied from the previous argument. As was noted before, a strictly a priori deductive theory of management and organizations faces pragmatic limitations even if one insists upon its theoretical and exhaustive validity. This practical consideration is the empirical bias of contemporary social science which seems to establish the necessity of both synthetic and analytical statements in an academically acceptable theory. Although premises may be adequately formulated analytically, there is a practical necessity for results to possess the multi-valued orientation and flexibility typical of the synthetic form. The presentation of results, however, brings up a more fundamental question as to the nature of scientific meaning.

### Dimensions of Meaning

Figure 4 exposed the basic structure of meaning as a triadic relationship; an association that may assume one of several forms. For instance, the context within which a symbol is used is likely to influence the relationships between referent, thought and symbol. It may be safely assumed that the term "organizational conflict" reflects a different meaning to the organization theorist and the departmental supervisor. For the former, it is an extremely interesting social phenomenon that may at times be both functional and dysfunctional. For the latter, it is a headache requiring excessive time and effort. This type of variation is known as "contextual" meaning.

There are various other types of meaning such as pragmatic, connotative and denotative, but one of the most troublesome in management is simple semantic meaning. This basically is the relationship between an object and the symbol or word used to describe it. Urwick has exposed the magnitude of the problem by noting twenty vague definitions of the word "management" itself.<sup>8</sup> Although this problem is not unique

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<sup>8</sup>Lyndall Urwick, "The Problem of Management Semantics," California Management Review, Vol. II, No. 3 (Spring, 1960), p. 78 and "The Tactics of Jungle Warfare," Academy of Management Journal, Vol. VI, No. 4 (Dec., 1963), p. 324.

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to the social sciences, it is more acute in this area because:<sup>9</sup>

1. Terms used in everyday conversation are the foundation terms of various social disciplines although their "scientific meanings" are more respective. Take for instance, the term "rationality" which, when used in connection with organizations, means more than social conformity.
2. At times there are no observable referents to which the terms refer. An example of this is the "hierarchy of needs." In spite of the fact that no one ever has or ever will see such a phenomenon, this "intangible referent" provides a vital and perfectly valid link in the epistemology of organizations.
3. Often there are identifiable referents relative to which agreement among qualified investigators is common; yet, there is disagreement about specifying a label to represent the phenomenon. Although the symbol "conflict" is a word used to describe a phenomenon, there is controversy as to whether it should be labeled functional or dysfunctional.
4. All words are subject to vagueness but some are more subject than others. The situation becomes quite evident in the normative-positive or "is-ought" controversy to be discussed later in the chapter.

These complications lead to the communication malfunctions because: a) men suppose their words to be the marks of ideas in the minds of other men and b) men suppose words to

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<sup>9</sup>Rollo Handy, Methodology of the Behavioral Science, Charles C. Thomas, Publishers, Springfield, Ill., 1964, pp. 157-158.

represent the reality of things.<sup>10</sup> Consequently, an academic theorist may completely bypass a practitioner in the discussion of functional effects of conflict if it is assumed that conflict means the same to each party. But what possible improvements do "scientific meanings" offer that provide a more accurate span of the triangle?

Little doubt exists as to a "relativity of meaning"<sup>11</sup> concerning any term. However, there is a common base of agreement upon which language is built and because of which communication is possible. This relatively small domain of agreement may be called "communicatable invariance."<sup>12</sup> The search for scientific meaning becomes a quest for this invariance. But meaning is a psychological process and for this reason the scientific meaningfulness of any event may, and to a large extent is, predetermined by one's epistemological perspective.<sup>13</sup> Previous association with the perspectives of

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<sup>10</sup>John Locke, "Of Words," in Donald E. Hayden and E. Paul Alworth, Classics in Semantics, Philosophical Library, Inc., New York, 1965, p. 44.

<sup>11</sup>Anatol Rapoport, Operational Philosophy, Harper and Brothers, Publishers, New York, 1953, p. 23.

<sup>12</sup>Ibid.

<sup>13</sup>William P. McEwen, The Problem of Social-Scientific Knowledge, The Bedminster Press, Totowa, New Jersey, 1963, p. 63.

extreme empiricism and extreme rationalism provides a justification for limiting the discussion to these two areas, although in reality a multitude of variations exist.

Essentially, it may be argued that one's perspective (epistemological) is determined by three factors:<sup>14</sup>

1. A person's value-situation or the primary preferences which motivate him.
2. An individual's meaning-situation which consists of the type of knowledge one considers to be acquirable.
3. One's knowledge-situation relating to the method by which one constructs knowledge and the criteria by which it is verified.

The relativity of meaning created by these counter perspectives underscores the previous arguments against an epistemological dichotomy. Methodological tolerance requires that one constantly reexamine his perspective to insure that his criticisms originate from a concern for the validity of theory and not from a dogmatic philosophical perspective that polarizes his thinking. Table I reveals the nature of the perspectives of the empiricists and rationalists which, in the absence of compromise, insure the impossibility of mutually agreeable knowledge and the objective evaluation of evidence which is the fundamental requirement of all science.

In spite of the need for tolerance, one philosophy of

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<sup>14</sup>Ibid.

TABLE I  
THE RELATIVITY OF EPISTEMOLOGICAL PERSPECTIVES

|                     | Rationalists  | Empiricists   |
|---------------------|---|---|
| Value-Situation     | Desire for clear and distinct knowledge which is absolutely true.           | Indisputable information about factual events without reference to an <u>a priori</u> system.               |
| Meaning-Situation   | <u>A priori</u> system of universal truths not dependent upon perception.   | Quantitatively analyzed sense perception of particular events.  |
| Knowledge-Situation | Formal logical deduction from <u>a priori</u> axioms requiring consistency. | Inductive inferences from observations which are verified by experimental test under controlled conditions. |

NOTE: William P. McEwen, The Problem of Social-Scientific Knowledge, The Bedminster Press, Totowa, New Jersey, 1963, pp. 63-78.



scientific meaning has developed that would completely reject rational analysis and label it as scientifically meaningless. This idea, conceived by Bridgman in The Logic of Modern Physics, is known as operationalism.

### Operationalism

Many definitions of operationalism have been advanced, but basically they all seem to say "the proper definition of a concept is . . . in terms of actual operations, thus denying that any assertion has meaning if the operations involved in accomplishing it cannot be defined."<sup>15</sup> The similarity between operationalism and Comte's scientism hardly requires elaboration.<sup>16</sup> Epistemologically, it may be said that operationalism is ultra-empiricism of the highest order. An extensionally oriented concept such as this identifies the operations of verification with a definition of the process. It attempts to separate the observations of the P-field from the "imagined concepts" of the C-field (terms developed in previous chapter).<sup>17</sup>

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<sup>15</sup>See Fritz Machlup, "Operationalism and Pure Theory in Economics," in Sherman Roy Krupp, editor, The Structure of Economic Science, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1968, p. 55, P. W. Bridgman, The Logic of Modern Physics, the Macmillian Company, New York, 1927, p. 30 and Chase, op. cit., pp. 118-119.

<sup>16</sup>Gordon W. Allport, Becoming, Yale University Press, New Haven, Conn., 1955, p. 11.

<sup>17</sup>Machlup, op. cit., p. 56.

Few would deny the contributions this type of analysis has made in physics and other physical sciences. One is inclined to question, however, the advisability of such a method in the social disciplines. Because of problems of replication in management and organizations, the theorist faces an extremely difficult task in bridging the gap between the theoretical and operational languages.<sup>18</sup> In fact, as the writer views it, to insist upon strict operationalism would in effect reject as utterly impossible anything that approaches a science in the social sphere. Obviously, other writers have entertained the same notion and as a result efforts have been made to redefine operationalism in terms of degrees. The definition above describes "narrow operationalism" to which an alternative position has been advocated in the form of "broader operationalism." This "realistic alternative" is founded upon five salient principles. They are:<sup>19</sup>

1. For a belief to be a knowledge claim, it must be stated so that its implications may be communicated in ways that can be tested by logical reasoning and observable evidence.

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<sup>18</sup>H. M. Blalock, Jr., "Theory, Measurement and Replication in Social Sciences," The American Journal of Sociology, Vol. LXVI, No. 4 (Jan., 1961), p. 345.

<sup>19</sup>McEwen, op. cit., pp. 92, 102-125.

2. A verifiable knowledge claim must be confirmed in accordance with a justified criteria before the assertion becomes genuine operational knowledge.
3. Regardless of how firmly established a theory may be, it remains operational only so long as those who subscribe to it "keep the door open" to further inquiry that might necessitate reexamination of the theory.
4. Operationalism requires that empirical testing be regulated by conceptual principles.
5. For any discipline to be operational, it must consider the limitations of the subject matter in order to determine for its own mode of analysis:  
a) what observational techniques are applicable  
and b) what testing techniques are acceptable for refuting theories and therefore for making predictions.

Only within the framework of "broader operationalism" is it possible to scientifically acknowledge social reality. Although extreme extensional orientation has certainly reduced communicative difficulties in some areas, its social science counterpart, narrow operationalism, would likely create a "scientific void" in the understanding of management and organizations. Obviously, this type of analysis would align itself with pure behaviorism and forfeit the psychic understanding of the meaning of an action to an "actor" which the study of management seeks to discover. Thus, broader operationalism seems a worthy goal for management and organization theory. This position lacks dogmatism, yet, it places upon the scholars of the field scientific responsibilities such as the establishment of a "justified criteria" for the

acceptance of knowledge. Attention to these matters could encourage a "management methodstreit"<sup>20</sup> which would require a thorough examination of management methodology. Such a debate could hardly establish once and for all the proper methods of the social sciences, but it might make explicit professionally recognized criteria for confirmation. This is precisely why management and organization theory needs to examine its methods. Methodology fulfills a most important function in promoting mutual understanding among social scientists. The power of any argument rests upon this understanding; and when the foundations are too weak, it is the argument of power that triumphs.<sup>21</sup>

Normative and Positive Theory: An Issue of  
Morality and Abstraction

The argument of power exposes an important methodological issue not yet discussed. This controversy deals with the proper place of value judgments in the study of management and organizations. Before going further, however, a definition of terms is in order. A positive science may be

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<sup>20</sup>Methodstreit refers to a methodological debate that took place in the last half of the previous century between the Austrian and German Historical Schools of Economics.

<sup>21</sup>Felix Kaufmann, Methodology of the Social Sciences, The Humanities Press, New York, 1958, p. 244.

defined as a body of systematized knowledge concerning "what is"; a normative science relates to "what ought" to be. The object of a positive science is the discovery of uniformities, while the objective of a normative science is the establishment of ideals.<sup>22</sup>

Therefore, the problem of value judgments and science assumes at least a two dimensional relationship. Dimension one is morality and questions the justice of casting of one's values on others. The second dimension is communication which examines the abstract nature of judgments of value and their effect on the communicative process.

Primary argumentation has been formulated around the first dimension with the positivists taking the position that science is and must be Wertfreiheit or value free. They give two reasons for this conclusion. The first simply states that it is futile to approach social facts with the attitude of a censor who either approves or disapproves of an event.<sup>23</sup>

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<sup>22</sup>John Neville Keynes, The Scope and Method of Political Economy, 4th ed., Kelley and Millman, Inc., New York, 1955, pp. 34-35 and Royall Brandis, "Value Judgments and Economic Science," The Quarterly Review of Economics and Business, Vol. III, No. 2 (Summer, 1963), pp. 44-45.

<sup>23</sup>Ludwig Von Mises, Human Action, Yale University Press, New Haven, Conn., 1949, p. 2.

Since the objective of science is knowledge which leads to prediction, an analysis of "what ought" to be is of little value. Only through concentration upon the actual phenomenon can predictive value be obtained. It is noted that the natural scientist does not approach physical processes with the objective of revolutionizing the actions of the elements. Instead, he seeks to understand why they act as they do. This, according to the positivist, is the objective of the social scientist. Although the understanding of social phenomena might dictate an examination of the actor's values, it does not require an effort to reform them. The solution of a labor dispute may require that the negotiators understand each other's value system, but arguments of how industrial relations "ought" to be from one standpoint or the other provides little aid in resuming operations and preventing the reoccurrence of trouble.

Another reason advanced in support of the positive position is a question of logic which purports the logical impossibility of deriving ethical values from natural propositions. G. E. Moore in his Principia Ethica offers an "open question argument" to prove this logical impossibility.<sup>24</sup>

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<sup>24</sup>Pap, An Introduction to the Philosophy of Science, op. cit., pp. 415-416.

Suppose that the statement "X is right" is synonymous with "X maximizes happiness." Then the question of whether an action that maximizes happiness is really right or whether an action that is right really maximizes happiness is as futile as the question of whether right is really right. The question is always "open" because ethical predicates have subjective meanings and cannot be duplicated in neutral descriptive language. Any attempt to analyze such ethical or metaphysical questions by natural or scientific means is to commit the "naturalistic fallacy." No science, only the subjective preferences of the individual, can answer such questions.

Some take issue with this, however, in maintaining that because the social sciences deal with human issues they simply cannot evade the necessity of pronouncing value judgments.<sup>25</sup> To them judgments of values are a necessary part of any science of human behavior. Fundamentally, they argue that man is motivated by values and that he seeks a guide to what his values should be; thus, a science of society must satisfy this need. In fact, some go so far as to argue that it is the concentration of the social discipline upon these desired ends that

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<sup>25</sup>W. Zajdlic, "The Limitations of Social Sciences," Kyklos, Vol. IX, No. 1 (1956), p. 70.

will provide the unification of all social sciences.<sup>26</sup> It may be seen from this that the essential disagreement results from what each group views as the object of science; is it means and ends or is it means given the ends?

### On Means and Ends

Koopmans states that disagreements in economics and other social sciences can be traced to one or all of the following.<sup>27</sup>

1. Disagreement about social objectives.
2. Argumentation concerning observed facts.
3. Failure to observe the rules of logic.

This section will argue that only the last two disagreements can be solved within the framework of science. The first is an axiological question that must be determined by each individual's scale of preference.

The relationship between means and ends, science and values is best illustrated by the following passage from Alice in Wonderland.

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<sup>26</sup>Theo Suranyi-Unger, "Facts and Ends in Economics," The Economic Journal, Vol. XLIX, No. 193 (March, 1939), p. 12.

<sup>27</sup>Oscar Lange, "The Scope and Method of Economics," The Review of Economic Studies, Vol. XIII, No. 3 (1945-1946), pp. 22-23.



Alice asked,  
 "Would you tell me please, which way I ought to  
 go from here?"  
 "That depends a great deal on where you are trying  
 to get to,"  
 said the cat.

It seems, at least to this writer, that the cat quite adequately assumes the role of the scientist. It can never be the task of science to provide binding norms and ideals from which directives for immediate activity may be derived.<sup>28</sup> More explicitly, it is the province of science to show, through description of real and hypothetical events, what would be the results of proposed lines of action or what lines of action would produce certain events.<sup>29</sup> Science deals with means and merely accepts the ends as given. Debate may take place only with respect to means relative to ends. Science can offer the most expedient means to an end or it can argue that a means chosen may lead to effects incompatible with the explicit goals, but the validity of the end itself escapes the domain of logic.

Perhaps a hypothetical macro illustration will help explain the distinction. Suppose that the political party

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<sup>28</sup>Max Weber, "Objectivity in Social Science and Social Policy," in Natanson, *op. cit.*, pp. 358-360.

<sup>29</sup>Frank Knight, Freedom and Reform: Essays in Economics and Social Philosophy, Harper and Brothers, Publishers, New York, 1947, p. 243.

in power in a certain country desires higher living standards for all its population. In order to accomplish this objective it elects to nationalize all domestic industry. Economic and political science may be able to systematically determine that nationalization of industry will not accomplish the stated objective or that it will result in consequences incompatible with higher living standards. However, these sciences can say nothing about the end itself. This is a question that only political and social philosophy may discuss although even these areas are not likely to reach a universally acceptable solution. As Albert Einstein stated in Relativity--A Richer Truth, "for the scientist there is only being, but no wishing, no valuing, no good, no evil, in short, no goal." In spite of the fact that this appears a bit amoral its meaning is quite different. This simply illustrates that the scientist qua scientist's purpose is the search for truth. Such an attitude does not require that the scientist qua individual reject everything moral, but it does effectively separate science and morality as two separate entities. There is no identity and thus there is no contradiction. Morality precedes science in that it establishes the ends about which all questions are open. Answers to these questions must be sought on the basis of one's faith and convictions, not through the use of scientific and theoretical experimentation.

As Weber points out, "the social scientist should confine himself to means while only the philosophers should lay bare the meaning of evaluations."<sup>30</sup>

No doubt by this time the reader has noted a fundamental difference between the political and social scientist and the business manager. Whereas the scientist has no "right" to create the values or ends toward the attainment of which science must strive, it may be argued convincingly that the business manager can create these ends. Within the privately owned firm the managerial function of planning does, in fact, do exactly this. In short, the administrator via planning creates the ends toward which the organization will move.<sup>31</sup> Professor Simon explicitly argues this proposition in the following passage:

Factual propositions are statements about the observable world which can, in principle, be tested to determine whether they are true or false. Decisions are more than factual propositions. They select one future state of affairs in preference to all others and direct behavior toward it. In other words, they contain ethical as well as factual elements. To

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<sup>30</sup>Edward A. Shils and Henry A. Finch, translators and editors, Max Weber On the Methodology of the Social Sciences, The Free Press, Glencoe, Ill., 1949, pp. 18-19.

<sup>31</sup>See Richard F. Barton, "Reality and Business Policy Decisions," Academy of Management Journal, Vol. IX, No. 2 (June, 1966), pp. 117-122.

determine whether a proposition is correct it must be compared with fact or lead via logical reasoning to propositions which are empirically testable. But ethical propositions cannot be derived by reasoning from factual ones, nor can they be compared with fact.<sup>32</sup>

Within the capitalistic system, the manager-administrator may "create the values" for his organization within broadly defined limits. However, the organization theorist qua researcher qua scientist does not enjoy the same privilege. Instead, he occupies a position much more similar to the political and social scientist. In theorizing he cannot dictate the objectives toward which organizations should work. The work of the theorist begins after the business managers, educational institution presidents or religious leaders state their objectives. Then and only then can the scientist of organizations formulate the most effective means for accomplishing the proposed goals.

Unfortunately, the literature of management and organizations does not stand witness that theorists have always assumed the role of the scientist as opposed to the reformer. Classical theory was not so much interested in how organizations actually worked as in developing a body of maxims which,

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<sup>32</sup>Herbert A. Simon, Administrative Behavior, 2nd ed., The Macmillian Company, New York, 1957, pp. 45-46.

if adhered to, would secure maximum efficiency.<sup>33</sup> To Taylor and his followers scientific management assumed an almost religious overtone as evidenced by his reference to soldiering as the "greatest evil" facing America and England.<sup>34</sup> Gantt also preached of "lower moral tones" resulting from inequalities between work and pay.<sup>35</sup> Human relations was no less guilty of this false identification since it also "preached" the virtues of the efficiency objective.

Contemporary periods have witnessed equally "moralistic" attempts to decide what the objectives of business should be. Perhaps the most pervasive of these deals with the social responsibility of private firms. The normative philosophy upon which this idea is based is illustrated in the following statement by Gantt.

The business system must accept its social responsibility and devote itself primarily to service, or the community will take it over and operate it in its own interest.<sup>36</sup>

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<sup>33</sup>Renate Mayntz, "The Study of Organizations," Current Sociology, Vol. XIII, No. 3 (1964), p. 96.

<sup>34</sup>Frederick W. Taylor, The Principles of Scientific Management, Harper and Brothers, Publishers, New York, 1923, pp. 12-14.

<sup>35</sup>Henry L. Gantt, Work, Wages and Profits, 2nd ed., McGraw-Hill Book Company, Inc., 1913, pp. 67-68.

<sup>36</sup>Henry L. Gantt, Organizing for Work, George Allen and Unwin, Ltd., London, 1919, p. 15. (Underlines added.)

Sheldon voices a similar position as follows:

It is important, therefore, that early in our consideration of management in industry to insist that however scientific management may become and however much the full development of its powers may depend on the use of the scientific method, its primary responsibility is social and communal.<sup>37</sup>

At another point he argues that "management must substitute cooperation for competition in the building of a more ideal society."<sup>38</sup> However, ideals are a function of the dreamer and in this case Sheldon made no effort to explain what an "ideal society" was so that others might compare their conceptualization and intelligently agree or dissent. Therefore, this "ideal society" is far from a scientific concept; it is an opinion, an opinion which is perfectly acceptable but not a universally applicable objective of all men. No doubt this cooperative ideal would be a nightmare to the competitive free enterpriser.

Thus, it becomes possible to appreciate the unusual circumstance of the management and organization theorist. The objectivity of science does not require that these individuals have no values or opinions relative to the proper ends of organizations and society as a whole. It

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<sup>37</sup>Oliver Sheldon, The Philosophy of Management, Sir Isaac Pitmann and Son, Ltd., New York, 1930, p. xi. (Underline added.)

<sup>38</sup>Ibid., p. 70.

does require, however, that statements of scientific significance be explicitly separated from propositions of value and opinion. No method of science can prove that the objective of business operations "should" be social betterment just as there is nothing to say it "should" be profit maximization. These "shoulds" become meaningful only after the ultimate objective is made explicit and meaningfulness is accomplished only within the framework of the given end.

The normative concept is manipulative in character since it proposes to influence behavior.<sup>39</sup> Positive science, on the other hand, attempts only to explain and describe--never to reform. Any workable normative theory can evolve if and only if 1) the goals of the organization are explicitly determined, 2) tentative optimal rules are formulated, 3) the rules are tested in real situations and 4) they are revised and retested to insure workability.<sup>40</sup> Ironically, if this is done the theory is no longer normative but positive because it makes no reference to ends, only to means with respect to stated ends.

Finally, a seeming paradox must be satisfied before

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<sup>39</sup>Jones, op. cit., p. 160.

<sup>40</sup>Avery B. Cohen, "The Theory of Firm: A View on Methodology," Journal of Business, Vol. XXXVI, No. 3 (July, 1963), pp. 323-324.

moving to the next topic. The proposition is simply this: why is not the advocacy of a positive approach to organizations itself a normative judgment? A few moments of reflection will now make it obvious why the two assumptions at the first of the chapter were necessary. At that point it was assumed that the objectives of science were the accomplishment of systematic knowledge and the constant reevaluation of its methods in a search for improvement. The argument in favor of a positive approach is, therefore, an advocacy of the more proper means to be used in accomplishing the stated ends of science. A positive approach is a means to an end, not an end itself and is, therefore, not a judgment of value and not a normative assertion.

But when do judgments of value begin? Is it not possible to argue that selective perception itself is the result of value orientation? The discussion of this issue is the objective of the following section.

#### Judgments of Relevance and Judgments of Value

Two distinct schools of thought have emerged in the social sciences relative to the value-centric predicament.<sup>41</sup> One group, that may be labeled the absolute skeptics, claims

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<sup>41</sup>McEwen, op. cit., pp. 55-61.



that the social-scientific enterprise can never achieve objective knowledge because the personal preferences and socio-cultural environment of the investigator predetermines one's results. However, internal inconsistencies become immediately evident in this assertion. Initially, one is inclined to ask how these critics manage to escape their own condemnations. In other words, if their argument be valid then their distrust of social knowledge must be nothing more than a product of their predetermined environmental prejudice.<sup>42</sup> It may also be noted that this skepticism would necessarily deny any type of scientific knowledge either physical or social since a large part of the natural scientist's work is also subject to errors of selective perception.

An alternative position, known as modified skepticism, recognizes that scientists entertain social preferences which account for their interest in specific problems.<sup>43</sup> However, this does not deny the possibility of objective knowledge of social phenomena as can be noted by reference to Table I.

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<sup>42</sup>Ibid.

<sup>43</sup>J. A. Passmore, "Can the Social Sciences be Value-Free?," in Herbert Feigl and May Brodbeck, editors, Readings in the Philosophy of Science, Appleton-Century-Crofts, Inc., New York, 1953, p. 674 and Morris R. Cohen, Reason and Nature, 2nd ed., The Free Press, Publishers, Glencoe, Ill., 1953, p. 81.

Fundamentally, both groups argue that various approaches are developed for acquiring and verifying information which become known as the knowledge-situation and may assume such forms as empiricism and rationalism. Each method relates to some meaning-situation that is derived in turn from an individual's value-situation. The value-situation of the scientist is the search for objective truth which leads him to examine various ways of accomplishing this objective (meaning-situation) and finally to apply a selected method in his research (knowledge-situation). The question of the possibility of objective truth reduces to an issue regarding the point at which cultural influences are introduced. The absolute skeptics argue that the knowledge-situation is culturally determined while the modified skeptics contend that it is the meaning-situation that is so decided.<sup>44</sup> Thus, the difference can be seen; if the knowledge-situation is a product of the environment, all the methods of science are invalidated and non-universally acceptable. However, if the meaning-situation is determined in this manner true knowledge is possible, at least to those who share an epistemological perspective.

But, there is more to the value-centric predicament than the imputation of values into the final product of science.

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<sup>44</sup>McEwen, loc. cit.

Epistemological perspectives determine to some extent what elements of objective events management theorists will abstract as meaningful. It is precisely for this reason that Talcott Parsons calls science "a selective system of cognitive orientations to reality."<sup>45</sup> When the selection is deliberate, "slanting"<sup>46</sup> occurs; but slanting and the selective system of science are two fundamentally different processes. The selective perceptual system is unconscious; slanting is not. Slanting involves a deliberate attempt to deceive, whereas unconscious selective perception has no such objective. Logical intuition confirms the impossibility of determining in advance the importance of a given factor in a complex situation, thus making judgments of relevance an absolute necessity.<sup>47</sup> In this sense all knowledge of society or nature is knowledge obtained from a particular viewpoint and is subjective. It does not follow from this that research

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<sup>45</sup>Ernest Dale, "The Functional Approach to Management," in Harold Koontz, editor, Toward A Unified Theory of Management, McGraw-Hill Book Company, Inc., 1964, p. 22.

<sup>46</sup>See S. I. Hayakawa, Language in Thought and Action, 2nd ed., Harcourt, Brace and World, Inc., Chicago, 1964, p. 48 and Fritz J. Roethlisberger, in Koontz, op. cit., pp. 58-59.

<sup>47</sup>Fritz Machlup, "Are the Social Sciences Really Inferior?," in Natanson, op. cit., pp. 165-166 and Simon, op. cit., p. 51.

in the social sciences can result in knowledge that is valid for one person and not for another.<sup>48</sup>

Individual hopes and social ideals can be kept from coloring the results of research through the self-correcting mechanism of the scientific attitude.<sup>49</sup> It must be noted that all the projects of the physical sciences past and present have not been independent of the values of man, yet objectivity has been maintained. Such universal agreement is unlikely in social areas but even in this domain the fundamental tenet of those who believe in scientific discussion is that matters of fact and logic can be agreed upon by competent men of good will.<sup>50</sup> By choosing to pursue scientific inquiry, the scientist enters the "corpus of science" and by doing so is obligated to accept what is considered to be established knowledge or show cause why he cannot do so.<sup>51</sup>

Thus, it is not the degree of intentional or subconscious bias that determines the validity of a theory. This can be determined only through the rigor of discursive reasoning and

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<sup>48</sup>Shils and Finch, op. cit., pp. 81-84.

<sup>49</sup>Ernest Nagel, "Problems of Concept and Theory Formation in the Social Sciences," in Natanson, op. cit., pp. 199-200.

<sup>50</sup>George Stigler, The Theory of Price, The Macmillian Company, New York, 1946, pp. 15-16.

<sup>51</sup>Alfred Schultz, "Common Sense and Scientific Interpretation of Human Action," in Natanson, op. cit., p. 337.

empirical test. Theories and principles are not easily formulated in the scientific community; first they must be scrutinized and debated prior to their acceptance or rejection.<sup>52</sup> The objectivity of science arises, not because the individual is impartial, but because he is subject to constant test by impersonal and skeptical scientific colleagues and methods.<sup>53</sup>

The "obligations" of scientific skepticism to insure objectivity is not entirely free from error because all men are not scientists. Students of management and organizations are often tempted to unquestionably accept the word of influential writers in the area. If research findings were limited to empirical and logical facts such a "blind acceptance" would do no harm. However, as two writers clearly state, "the mixture of factual findings and values is so prevalent in the literature of organizations that it is often extraordinarily difficult to distinguish between the two."<sup>54</sup> It can hardly be denied that few theorists have openly welcomed and encouraged skepticism to the degree evidenced by Professors Simon,

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<sup>52</sup>Joseph J. Schwab, "What Do Scientists Do," Behavioral Science, Vol. V, No. 1 (Jan., 1960), p. 13.

<sup>53</sup>Joan Robinson, Economic Philosophy, Aldine Publishing Company, Chicago, 1962, p. 23.

<sup>54</sup>Herbert G. Hicks and Friedhelm Gronzy, "On Methodology in the Study of Management and Organizations," Academy of Management Journal, Vol. X, No. 4 (Dec., 1967), p. 381.

Smithburg and Thompson in the following quotation from the introductory section of Public Administration:

We encourage in the reader a critical attitude toward evidence. In stating generalizations about administration we have tried to present the evidence on which these generalizations are based, where evidence exists . . . we hope the reader will apply the same standards of rigor to our unproved generalizations that we have applied to these generalizations of others . . . and will join the great task of substituting fact for fancy and replace ambiguous proverb-like wisdom with valid propositions which will meet the tests of reason and experience.<sup>55</sup>

What a most refreshing statement this is to an attentive positivist. It must be conceded, however, that it is not the element of judgment per se that is dangerous because clearly:

. . . if behavioral knowledge is not disciplined by values about which considerable consensus has developed, somebody will use that knowledge to discipline all men in organizations without their knowledge.<sup>56</sup>

The danger exists with respect to the confusion of fact and value as well as the failure to make explicit their separate identity. Miss Robinson's description of economics as "limping along with one foot in untested hypotheses and the other in metaphysical slogans"<sup>57</sup> might apply equally well to

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<sup>55</sup>Herbert A. Simon, Donald W. Smithburg and Victor Thompson, Public Administration, Alfred A. Knopf, New York, 1950, p. viii.

<sup>56</sup>Robert T. Golembiewski, Men, Management and Morality, McGraw-Hill Book Company, New York, 1965, p. 3.

<sup>57</sup>Robinson, op. cit., p. 25.

management. Positive theory is a sign of the maturity of science and as a science progresses, its prescriptive elements tend to become less frequent.<sup>58</sup> Therefore, let there be judgments both of relevance and value. For the judgments of relevance may be scientifically debated, and any scientist who objects either to the inclusion or exclusion of a given element may attack the theory on that basis. It is left to him to prepare his argument and present his case. The scientific community may then experimentally and logically test the validity of his claims. Thus, judgments of relevance are scientifically determinant and debatable constituting no serious problem to science.

The same cannot be said of judgments of value. The only expedient means of reducing problems arising from a mixture of fact and value is the "rule of explicit statement." This rule does not require that values be excluded from the study of management and organizations, but it does insist that a difference be made between scientific fact and axiological prescription. Compliance with this rule would alleviate the question of morality because the acceptance or rejection of the writer's values becomes the choice of the reader.

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<sup>58</sup>Rollin H. Simonds, "Toward A Science of Business Administration," Academy of Management Journal, Vol. II, No. 2 (Aug., 1959), p. 137.

However, even explicit statements of judgment, if they are in vague forms, will not solve the communicative problems except to the extent that the terms are less ambiguous by virtue of their reference to a specific system of axiological rules.<sup>59</sup> The explanation of the nature of this problem requires the use of a rather specialized technique.

### The Structural Differential

The report of scientific fact is an abstraction, not the objective occurrence itself. Although a scientific report is the most accurate of verbal and symbolic descriptions, it never accomplishes complete perfection. Such a description is often referred to as an observation which concentrates on denotative meanings.<sup>60</sup> Denotative meanings are those emphasizing word-object relationships that can be checked with reference to tangible reality. Note, however, that even this is an abstraction because facts either exist or do not exist--truth and falsity are meaningless relative to them. Observations on the other hand, may be true or false depending on how well they coincide with the objective event.<sup>61</sup>

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<sup>59</sup>Kaufmann, op. cit., p. 200.

<sup>60</sup>David K. Berlo, The Process of Communication, Holt, Rinehart and Winston, New York, 1960, p. 221.

<sup>61</sup>Ibid., pp. 218-219.



Regardless of this inaccuracy, observations are associated with lower levels of abstraction.

Statements made on the basis of observations are known as inferences and assert characteristics about the unknown on the basis of the known.<sup>62</sup> For instance, suppose it has been observed that closely arranged work areas in steel plants promote group dissention. To establish a general rule of plant layout on the basis of this observation is to infer that the results of the experiment are broadly applicable to yet unknown situations. But how do judgments fit into this scheme? Are they observations or inferences?

Judgments are a special type of inference. Unlike observations they emphasize connotative or emotive meanings.<sup>63</sup> Thus, judgments have no referent in objective reality. More specifically, judgments express approval or disapproval and take place at any level of abstraction above observation. When one expresses approval or disapproval the judgment is made on the basis of what is observed rather than the event or process that actually happens. Therefore, judgments lie within an abstraction range of greater than observation but

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<sup>62</sup>Hayakawa, op. cit., p. 41.

<sup>63</sup>Pap, An Introduction to the Philosophy of Science, op. cit., p. 10.

less than infinite inference. The degree to which judgments are based on the actual characteristics of a phenomenon is simply a function of the level of abstraction at which they take place. Generally speaking, the higher the abstraction the greater the "propensity for communicative difficulties."

By use of a certain tool, Korzybski's structural differential, the nature of this type of problem in management and organizations may be illustrated. Referring to Figure 10 the communicative problem of value judgments is noted. The large triangle at the bottom of the page represents the actual process or event. In this case it is the managerial concept of human relations. The numbers on the right and left refer respectively to the conceptual advantages and disadvantages of this approach. The characteristics indexed are as follows:

#### Disadvantages

1. Country-club atmosphere
2. Excessive record work
3. High benefit cost
4. Reduced efficiency
5. Lack of discipline
6. Etc.

#### Advantages

1. Job satisfaction
2. Employee-employer relations
3. Low labor turnover
4. Individual creativity
5. Productivity
6. Etc.

Briefly, this is a list of some of the advocated pros and cons of human relations. It is certainly not exhaustive because of the writer's abstraction process resulting from limited academic and practical exposure to the concept. For this reason, along with the fact that all is never known concerning an actual event, the etc. is included as the final factor in each group.

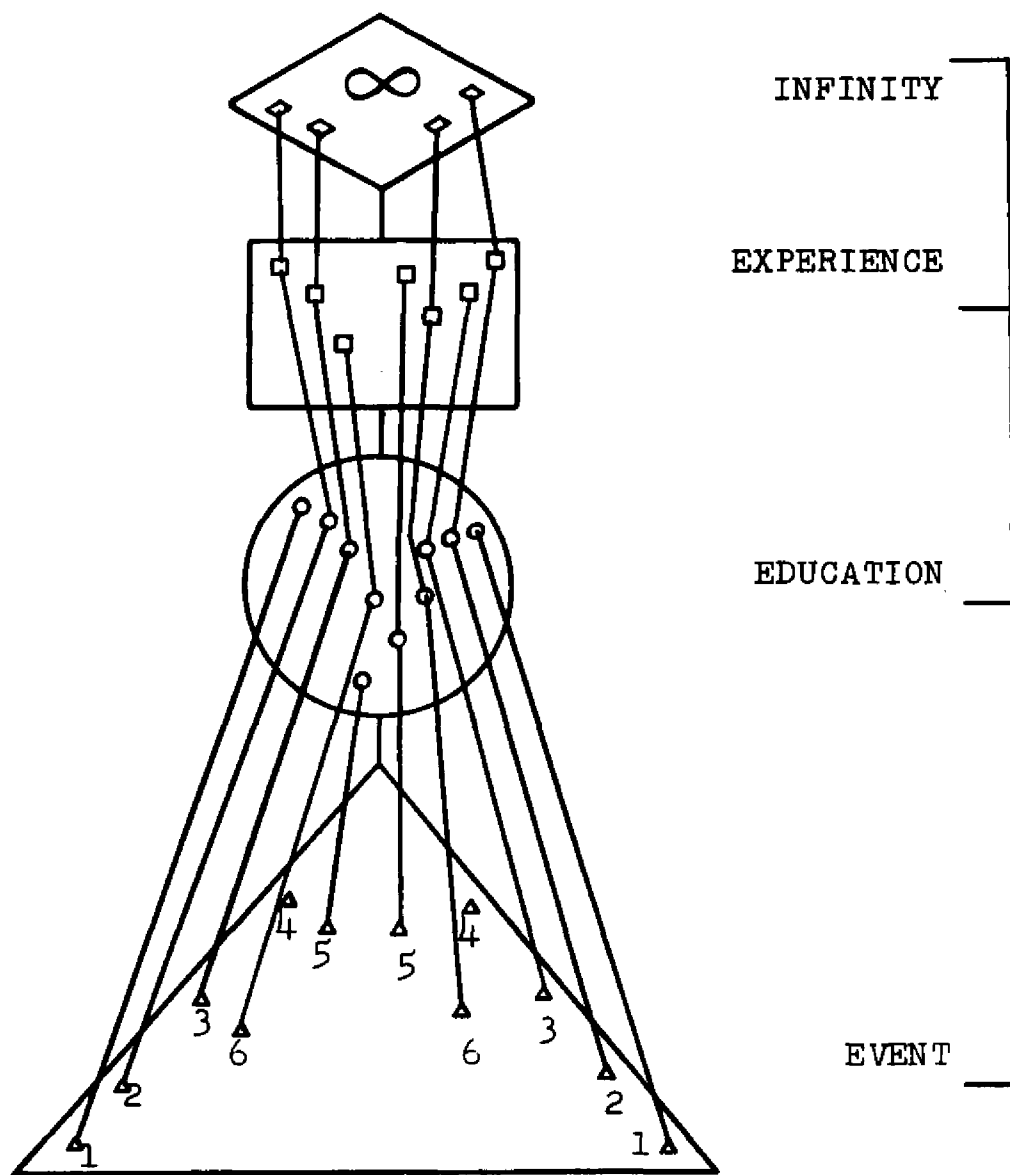


FIGURE 10  
THE STRUCTURAL DIFFERENTIAL  
(Human Relations Approach)

Hypothetically, the circle above the triangle represents a researcher's image of the objective concept after he has completed the necessary training as a foundation for his research. The lines running from the triangle to the circle illustrate the characteristics retained after education and individual thought concerning the subject. Thus, the researcher via his preparation is separated from the concept so that only the following characteristics remain as his idea of the human relations approach.

Disadvantages

1. Country-club atmosphere
2. Excessive record work
3. High benefit cost
5. Lack of discipline
6. Etc.

Advantages

1. Job satisfaction
2. Employee-employer relations
3. Low labor turnover
5. Productivity
6. Etc.

Further experience in research and prolonged exposure to the human relations idea results in the abstraction of additional elements from the concept. This situation is illustrated by the rectangle above the circle. The lines connecting the two once again illustrate the fact that characteristics are "lost" in the process of abstracting. For purposes of illustration assume that only the following characteristics remain at level three.

Disadvantages

2. Excessive record work
3. High benefit cost
6. Etc.

Advantages

2. Employee-employer relations
3. Low labor turnover
5. Productivity
6. Etc.

Based on this, suppose that the researcher-teacher judges that the advantages of productivity, low turnover and favorable employee-employer relations outweigh the disadvantages of excessive record work and high benefit costs. With reference to this evaluation the human relations approach is declared to be "good." In doing so no reference is made to the fact that such an assertion is opinion based on a few uniquely abstracted characteristics of the concept in toto. In other words, the judgment is made on the basis of a finite number of characteristics abstracted from an infinite set of all the qualities the concept possesses. It is at this point the danger enters. To the unsuspecting student, human relations is depicted as good; thus, solving one problem and freeing time to concentrate on others. Relative to human relations the thought process is stopped save for only the most ambitious scholars.<sup>64</sup> In reaching this "conclusion" there is little or no further searching for truth and possibly even a blindness to any contrary conditions that might develop. Little might the pupil know of human relations, yet, to him it is "good." The point to be made is that "good" is defined only in terms of the judge himself.

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<sup>64</sup>Hayakawa, op. cit., p. 46.

The student qua business practitioner novice, upon accepting a job with a small firm, may find to his surprise that the human relations approach is "bad." Why? Because his boss says it is! The boss has abstracted high benefit costs as a characteristic he cannot tolerate. Obviously, the boss has selected another group of qualities from the infinite set and assigned subjective weights to them. Once again it is emphasized that judgments are made on the basis of dominant characteristics and subjective weights, not relative to objective occurrences.

The example developed was selected for illustrative purposes only. Judgments could have taken place at other levels, as indicated by the infinity sign in the highest level, and any management concept could have been selected. Many complications such as a "dynamic expansion" of the entire structural differential resulting in new characteristics at various levels were obviously neglected for purposes of simplicity. But the point would have been the same, the only difference being that the higher the abstraction level at which judgment takes place, the fewer will be the actual characteristics of the phenomenon upon which it is based.

An explicit proclamation that one's judgments are merely opinion, not empirical fact, can aid in reducing the communicative as well as moral problems of value judgments. By

explicit acknowledgment of opinion the thought process of the student is not hindered and may even be stimulated because the door remains open to examination and concept formation. If, however, the door remains open to thought one might ask why so much disagreement exists relative to the various methodological issues discussed to this point. One reason, as mentioned before, is simply that the door has not always been open and in addition the subject matter of the social disciplines display a uniqueness not typical of physical processes. But the fundamental reason, it must be conceded, is that the lack of sophistication in the social sciences has left the meaning-situation of the individual more subject to the emotional influences of maturation and socialization. In other words, the social scientist faces a greater task in achieving objectivity, although to do so is by no means impossible, because many of the issues he must examine contribute to his personal development and the formation of his "self concept."

### The Psychology of Self-Projection

There is little doubt that many of man's ideas and values result from the influence of the environment.<sup>65</sup> In fact,

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<sup>65</sup>Stuart Chase, The Proper Study of Mankind, Revised ed., Harper and Brothers, Publishers, New York, 1956, p. 6.

students of human behavior view the emergence of the "self" and the activities of experiencing as a dynamic developmental process beginning at birth and continuing throughout life.<sup>66</sup> According to this view, experiencing today is a function of funded information or background (B) which structures perception and establishes a meaningful foreground (F) to be evaluated before becoming genuine experience (E).<sup>67</sup> Mathematically, this proposition may be stated as

$$E = f(F, B)$$

so that E changes in some relation to changes in F and B. The process is said to be dynamic because  $E_1$  in time  $t_1$  becomes part of the background to structure the new perception in  $t_2$ . This proposition, while deviating somewhat from the original formulation,<sup>68</sup> can be illustrated as follows:

$$\begin{array}{ll}
 \text{Time } t_1 & E_1 = f(F_1, B_1) \\
 \text{Time } t_2 & \downarrow \\
 & E_2 = f(F_2, B_2) \\
 \text{Time } t_3 & \downarrow \\
 & E_3 = f(F_3, B_3) \\
 \vdots & \\
 \text{Etc.} &
 \end{array}$$

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<sup>66</sup>Louis Kaplan, Foundations of Human Behavior, Harper and Row Publishers, New York, 1965, pp. 127-128.

<sup>67</sup>Jones, op. cit., p. 41.

<sup>68</sup>Although Jones accomplishes a more rigorous analysis of the process and argues that experience  $E_1$  becomes part of foreground  $F_2$ , etc., this illustration includes  $E_1$  in  $B_2$ , etc., for purposes of simplification.



If this is true, and social research suggests that it is, serious implications are noted for teacher-pupil communications.

### Communication Problems Involving the "Self"

The individual who initiates communication is known as the source. Communication originating from this source is a function of the source's 1) attitude toward himself, 2) attitude toward the message and 3) attitude toward the receiver.<sup>69</sup> These attitudes are formulated by Francis Bacon's idols of the tribe, cave, marketplace and theater which include all external influences such as culture, education, socialization and contemporary philosophies.<sup>70</sup> Thus, communication is viewed as a psychological process best understood in terms of mental states.<sup>71</sup> It is this proposition, founded upon the "thingumbob principle" which states that human organisms call upon previous experience and assumes that what has been most

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<sup>69</sup>Berlo, op. cit., pp. 46-48.

<sup>70</sup>Francis Bacon, "Novum Organum," in Hayden and Alworth, op. cit., pp. 15-23.

<sup>71</sup>T. M. Higham, "Basic Psychological Factors in Communication," Occupational Psychology, Vol. XXXI, No. 1 (Jan., 1957), p. 5.

probable in the past will be most probable in the future.<sup>72</sup>

The implications of this principle are best explained via two well known models of the communicative process.

### The Process of Communication

Models have proven useful in the analysis of the communicative process because they permit one to isolate the parts of reality which are of particular interest to him. There are models or ideal types designed to illustrate many things, however, only two have been selected on the basis that they most adequately relate to the problem at hand.

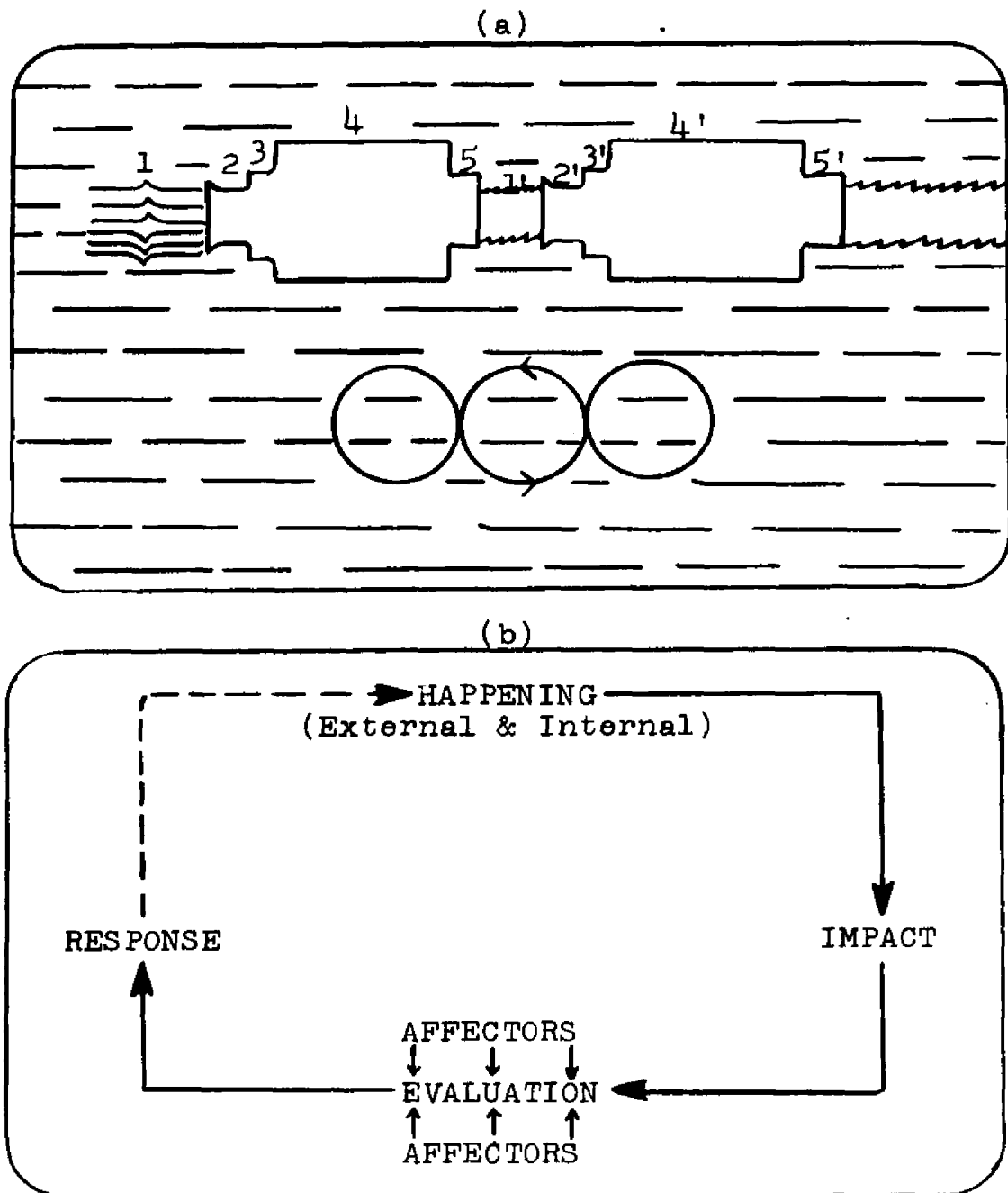
Johnson on Projection. Figure 11a reveals a scheme developed by Professor Wendell Johnson in 1946.<sup>73</sup> Johnson's model makes several important points but primarily it illustrates that people always speak to and about themselves. Briefly, the model is explained in the following stages:

1. Stage 1 represents any external stimulation to the sensory organs of the source (in this case the source is actually the receiver).

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<sup>72</sup>Douglas McGregor, "The Major Determinants of the Prediction of Social Events," Journal of Abnormal and Social Psychology, Vol. XXXIII, No. 2 (April, 1938), p. 203 and Chase, The Power of Words, op. cit., p. 52.

<sup>73</sup>Wendell Johnson, "The Fateful Process of Mr. A Talking to Mr. B," Harvard Business Review, Vol. XXXI, No. 1 (Jan.-Feb., 1953), p. 50.



SOURCE (a): Wendell Johnson, "The Fateful Process of Mr. A Talking to Mr. B," Harvard Business Review, Vol. XXXI, No. 1 (Jan.-Feb., 1953).

SOURCE (b): William V. Haney, Communication: Patterns and Incidents, Richard D. Irwin, Inc., Homewood, Ill., 1968.

FIGURE 11

JOHNSON ON PROJECTION

2. Stage 2 reveals the resultant sensory stimulation. The constriction indicates the source qua receiver's limited ability to respond.
3. Stage 3 is the neurophysiological channeling of the sensory stimulation. This is still a preverbal stage.
4. Stage 4 shows the first stage of symbolization. The enlargement suggests the evaluative process which occurs. It is here where the background (B) structures the perception.
5. Stage 5 represents the final stage of symbolization with the constriction indicating the selection of a few symbols from among an infinite number available for overt expression.
6. Stage 5 becomes the stage 1 for the receiver of the message.

The expanded infinity sign at the bottom of the diagram serves to illustrate the notion of self-projection. On the basis of one's experiences he evaluates the stimuli which form the framework for communication with others. Then, by projecting his subjective evaluations into his fellow man, one attempts to accomplish a transfer of meanings via verbal or written communications. Feedback is received and becomes part of the source's sum total of experience. Therefore, communication is a continuous and iterative process between source and receiver which is dynamic and ever changing. To better understand this proposition observe Figure 11b which illustrates the evaluative operations of the source. The lower part of the diagram may be looked upon as an enlarged stage 4 in Figure 11a while the happening and impact are

analogous to stages 1, 2 and 3. In stage 4 certain affectors (habits, prejudices, experiences, etc.) go to work and determine the response one will exhibit to the stimuli received.<sup>74</sup> The response is determined only after extensive evaluation has taken place. For instance, stimuli received are structured and assigned meaning on the basis of their association with the sum total of the affectors. The properties the source assigns to the receiver are also determined by the unique characteristics of the source's affectors. Thus, the entire communicative process is influenced by the projection of subjective characteristics from one party to the other. Therefore, evaluation and response are but one's projection of himself into others. This is the only means by which experience becomes meaningful. Failure to consider this self-projection may result in less meaningful and faulty communication. It can blind one to the filtering process and cause him to feel that everyone thinks as he does, or, in the case of an instructor it may reduce his responsiveness to feedback. Thus, self-projection is an intergal part of all communication and only an awareness of the presence of such a process can minimize its adverse effects.

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<sup>74</sup>William V. Haney, Communication: Patterns and Incidents, Richard D. Irwin, Inc., Homewood, Ill., 1960, p. 3-8.

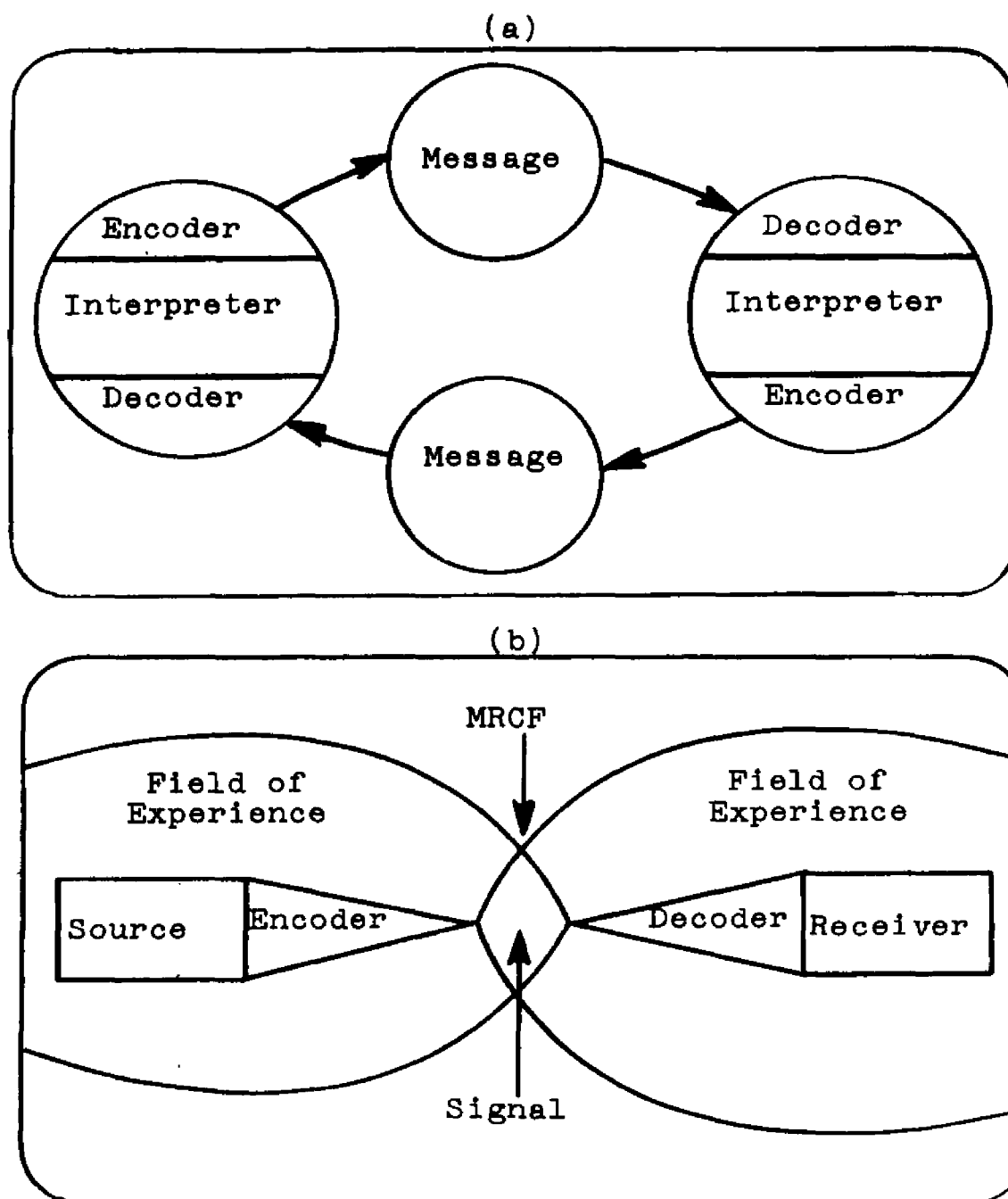
Another model, originally designed to illustrate mass communication, was developed by Wilbur Schramm. This model is particularly useful because it is easily adaptable to a classroom situation.

An Adaptation of Schramm. The basic Schramm model was developed in a book entitled The Process and Effects of Mass Communication.<sup>75</sup> Essentially, it consists of three elements: a source, a signal and a destination. Both the sender and receiver perform the functions of decoding, interpreting and encoding, thus creating a dynamic feedback system. Figure 12a illustrates the nature of this process. However, it is Figure 12b that has application to the classroom environment. For purposes of illustration, the teacher-researcher assumes the position of the source, the results of research or a lecture constitutes the signal, while the student is the destination. As Berlo has noted, the learning process is a dyadic relationship between teacher and student which requires effective communication.<sup>76</sup> In order for effective communication to take place there must be some overlap of experience or interest. This overlap has been referred to as "trans-

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<sup>75</sup>Wilbur Schramm, The Process and Effects of Mass Communication, University of Illinois Press, Urbana, Ill., 1955, pp. 3-26.

<sup>76</sup>Berlo, op. cit., p. 53.



SOURCE: Wilbur Schramm, The Process and Effects of Mass Communication, University of Illinois Press, Urbana, 1955.

FIGURE 12  
AN ADAPTATION OF SCHRAMM

cidental presuppositions" or an "underlying unity of spirit."<sup>77</sup> However, this paper will refer to it as the "mutually reciprocal communication foci" (MRCF). It is outside this MRCF that injections of value judgments create their serious communicative problems. The assumption that everyone views human relations as "good" requires a unity of value systems among all and a uniformity of connotation to the term. In reality, as has been shown above, this may be far from true because of varying environmental backgrounds and experiences. Although no unity of value systems exists, the influential source (teacher-researcher) may perpetuate his beliefs through the receiver (student) by expressing his subjective opinions under the heading of scientific fact.

It is this type of value judgment injection that accounts for the retention of antiquated ideas in educational situations. Because the source "holds on" to certain ideas, the receiver is tempted to accept them as true and pass them on to other receivers when he becomes the source. In some cases this "injection" of judgments is not even intentional because environmental factors have so thoroughly conditioned the source

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<sup>77</sup>Ernest Nagel, Logic Without Metaphysics, The Free Press, Glencoe, Ill., 1956, p. 349.



that he fails to recognize any alternatives are possible. Thus, many differences of opinion are environmentally determined and never challenged until the environment is altered.

According to the self-projection idea any belief may be influenced by environment and experience--even convictions relating to methodology. This proposition leads directly to the hypotheses the following empirical study proposes to examine. Specifically, the survey will attempt to determine whether or not environmental factors do, in fact, influence epistemological perspectives and other methodological convictions of management professors. But, assuming this is true, of what importance is such a finding?

Methodology Today and Theory Tomorrow. No timetable can be established for the methodological unification of management and organization theorists. In fact, some question, as the writer does, if a thorough integration will ever be accomplished. However, there is virtue in prediction and the increased certainty obtained by gaining insight into the future. For this reason, chapter four is devoted to the analysis of the following major and minor hypotheses.

Major Hypothesis - Professional attitudes toward methodological issues are a function of past and present environmental influences of the researcher and/or teacher.

Minor Hypothesis - Specific environmental factors do not influence the formation of all methodological convictions with equal intensity. Therefore, the primary determinant of one belief may or may not be the major determinant with respect to another.

If the two hypotheses are confirmed and if one accepts the notion of self-projection, the first step will have been taken toward gaining insight into the future of management and organization theory. This argument is based on the idea that today's academia, either consciously or unconsciously, will influence the theoretical exercises of future scholars who will structure the course of management science. On the other hand, should no environmental deviations be uncovered, serious questions might be raised concerning the exemption of methodological convictions from environmental influences. But before continuing with the study, a summary of the present chapter is offered.

### Summary

Chapter three has attempted to move from the philosophical formulations of the previous chapter to examine the practical aspects of methodological problems in organizations. The conclusions reached are itemized in the following list:

1. The language of science is a more restricted case of language in general. Science relies primarily on cognitive-descriptive rather than emotive verbal formulations. Although some propositions have been advanced to make definitions of the social disciplines more operational, only "broader operationalism" seems to offer real improvements in these areas.
2. It is the opinion of the writer that only those aspects concerning "what is" belong within the boundaries of organizational science. Although ideal formulations of "what ought to be" is an appropriate topic for philosophers, the subjective nature of these ends and the values upon which they rest defy scientific analysis.
3. Judgments of relevance are fundamentally different from judgments of value. While values escape scientific analysis, questions of relevance are testable and subject to logical debate.
4. Korzybski's structural differential proves to be a valuable tool in illustrating the dangers of disguised value judgments. Judgments of value are made on the basis of dominant characteristics abstracted from an infinite array which an objective event possesses. If care is not taken to separate fact and value researchers may cast their values upon students who know very little about the subject being judged.
5. A fundamental tenet of general semantics states that self-projection plays an important role in all communicative efforts. It is further argued that the dogmatic assumption that everyone thinks exactly as the source on the communication may result in serious problems. The conscious acknowledgment and awareness of this process will contribute greatly to the establishment of a "mutually reciprocal communicative foci" between student and teacher.
6. The foundation has been formed to empirically test a major and minor hypothesis relating to the determinants of differences of opinion relative to various methodological concepts. The primary objective of the test is to provide some insight into the future of management theory by making use of the self-projection concept.

## CHAPTER IV

### A SURVEY OF MANAGEMENT ACADEMIA

How sharp the blade  
To trim the tree of chance?  
How rich the castle where  
computers prance?

Philosopher, hand me your stone,  
A tool with which the blade to hone,  
Centers? Choices small in error?  
Chaotic gods . . . retreat in  
terror!

Models Bayesian? Parallel?  
How much like man?  
The streams of data  
and of time  
Must tell.

--Fred Massarik

### An Overview

The present chapter will attempt to report the results of a survey conducted among a sample of management professors. The survey was complex in the sense that it was accomplished in sequential stages. Therefore, the logical ordering of the many topics to be discussed will be provided by the progressive phases required for the completion of the study. But first, a rudimentary framework for analysis must be established.

### Specific Objectives of the Survey

In line with the empiricist's tradition, it becomes

necessary to examine some of the ideas thus far advanced. Specifically, an attempt will be made to empirically analyze the notion of self-projection among professors of management and organization theory. This self-projection concept will be tested via an examination of the hypotheses enumerated at the close of the preceding chapter. However, one question deserves consideration prior to the initiation of the study: what, if any, contribution will such an analysis make to the areas of management and organization theory?

#### Importance of the Study

To the writer's knowledge, there has been no previous research associated with the issues at hand. This apparent lack of interest is disturbing because of the academic questions this type of information could raise. However, rather than listing numerous less significant advantages, only the writer's idea of the primary contribution of this analysis will be noted. If it could be determined that certain environmental factors are important in formulating methodological convictions, some conception of the future of management and organization theory could be obtained. For instance, if the study should reveal that professors in public institutions have opinions which are separate and distinct from those teaching in private schools, it would be possible to project the effects of these counter positions upon the concept

formation of future students. With this in mind, the following section proposes to explain, in detail, the research design used in the survey.

### The Research Design

The research design adopted for the primary study was sequential in nature. The four fundamental steps involved provided the logical organization of the following sections.

#### Elaborations on Sample Selection and Response

It was determined by numerical count that nationally there were approximately one thousand professors whose primary teaching interests were in the area of management and organizations. Since nothing was known concerning the parameters of the universe, no statistical procedures were available to estimate the sample size needed. In order to insure a return from at least ten per cent (approximately 100) of the total population, it was decided that at least one third of the universe should be surveyed (actually 380 questionnaires were mailed). On the basis of other studies in the literature and subject to the constraint of cost, such a sample was considered more than adequate.

The professors to be included in the study were selected at random from two sources. The first source was the Faculty Personnel Directory<sup>1</sup> published by the American Association of

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<sup>1</sup>Richard R. Weeks, editor, Faculty Personnel Directory, 9th ed., American Association of Collegiate Schools of Business, 1965.

Collegiate Schools of Business. In order to insure adequate representation of AACSB schools, approximately 225 of the 380 questionnaires were sent to the faculties of member institutions listed in the 1965 directory.<sup>2</sup> The remaining 155 subjects were selected from individual school catalogs on file at the Louisiana State University library. Of the 380 faculty members surveyed, teaching positions were held in 255 different colleges and universities. Every effort was made to select only those teachers whose primary interests were in the field of management and organization theory. However, in some cases the extraction of the management faculty from the faculty in toto was difficult and at other times impossible. This problem was especially evident in the very small schools without structured programs within the school of business. When this problem presented itself, individual course descriptions were consulted. If neither method provided the desired information, the school, and therefore the faculty, was eliminated from the sample.

Regardless of the source used, the selection procedure was the same; all the individual members of the management faculty of a given college or university were aligned in a

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<sup>2</sup>Although no exact figures were available, a survey of member schools revealed that they were, in general, the larger institutions and therefore could be assumed to produce more management graduates. Thus, the AACSB schools were assigned this larger "weight" in the sample.

one dimensional array, assigned a number and selected through the use of a table of random numbers. Where the management faculty for a given school was large, additional questionnaires were sent in a ratio of one form per seven professors.

In addition, the sample was divided into four geographical classifications. Faculty members were then selected in roughly the same proportions as the population dispersion indicated by the 1960 census. This proportionate matching was made on the assumption that there exists some relationship between college enrollment and population. Figure 13 reveals the geographical areas that were established. These four subclassifications will be referred to simply as the East, Midwest, South and West.

It may also be noted from Figure 13 that public, private and denominationally supported schools were represented in the sample. The first figure shown in each area is the total number of forms sent to that particular region. The three following numbers account, respectively, for the number of public, private and denominational schools surveyed. Because the catalog of almost every existing school was consulted, it seems reasonable to assume that these figures represent the approximate proportions of the institutions situated in the four areas.

The questionnaires were placed in the mail on April 1, 1968, and no returns were included in the computations which



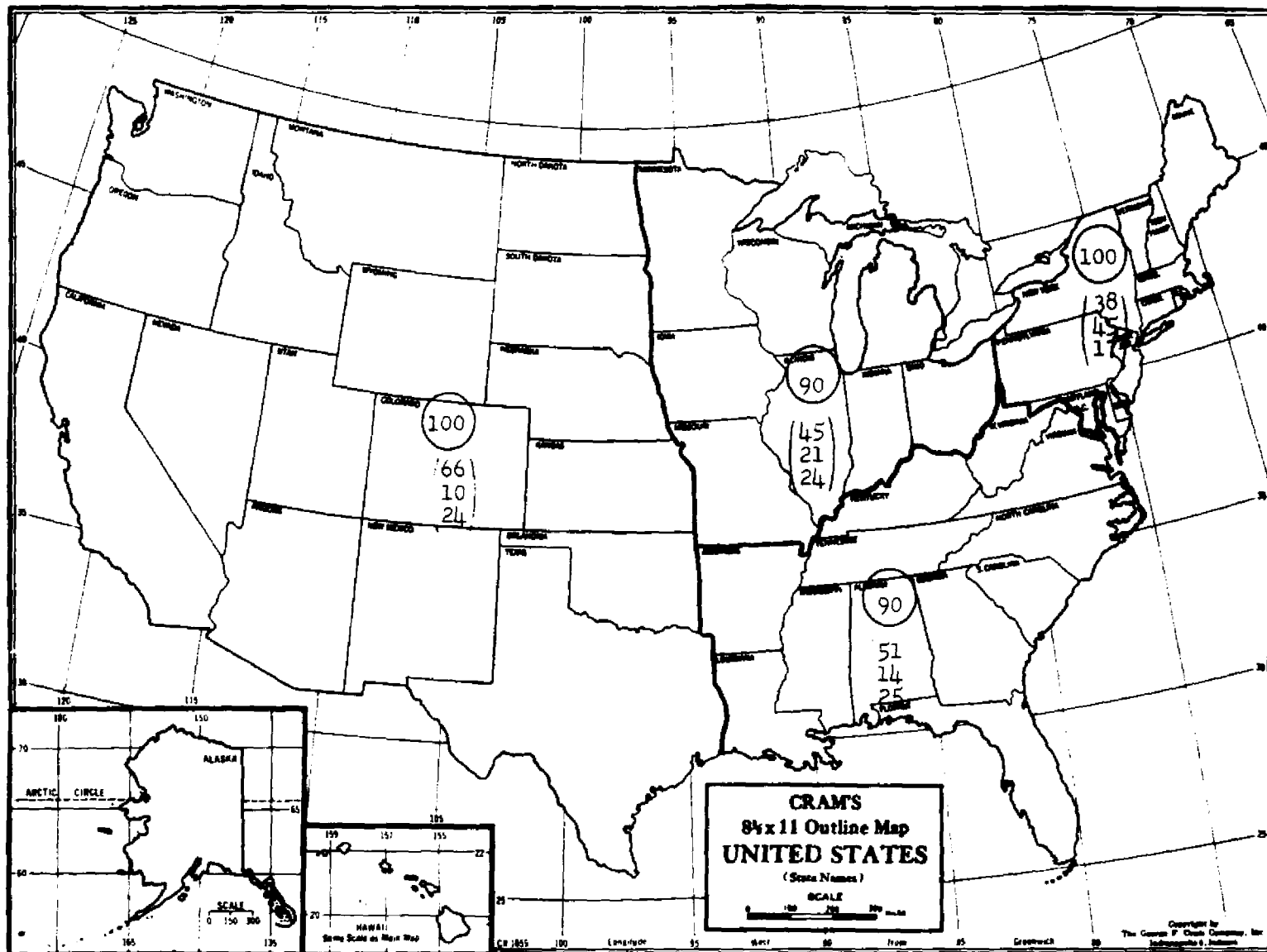


FIGURE 13  
 GEOGRAPHICAL DISPERSION OF SAMPLE

were received after June 2, 1968. Of the 380 forms posted, 162 or 42.6 per cent were returned. However, 15 of these were not usable for the reasons listed below:

1. Professor's primary interest in area other than management. (8)
2. Incomplete completion of the form. (6)
3. Received after June 2, 1968. (1)

Thus, the "usable percentage return" was 38.6 per cent. The returns by region and type of institution are given below:

| <u>Area</u> | <u>Number<br/>Sampled</u> | <u>Usable<br/>Returns</u> | <u>Per Cent of<br/>Return</u> |
|-------------|---------------------------|---------------------------|-------------------------------|
| East        | 100                       | 32                        | 32.0                          |
| Midwest     | 90                        | 36                        | 40.0                          |
| South       | 90                        | 40                        | 44.4                          |
| West        | 100                       | 39                        | 39.0                          |
|             | <u>380</u>                | <u>147</u>                |                               |

| <u>Type of<br/>Institution</u> | <u>Number<br/>Sampled</u> | <u>Usable<br/>Returns</u> | <u>Per Cent of<br/>Return</u> |
|--------------------------------|---------------------------|---------------------------|-------------------------------|
| Public                         | 200                       | 96                        | 46.0                          |
| Private                        | 90                        | 29                        | 32.2                          |
| Denominational                 | 90                        | 22                        | 24.2                          |
|                                | <u>380</u>                | <u>147</u>                |                               |

In total, the data were classified and the responses differentiated on the basis of ten environmental factors. These subgroupings are given in Table II. Some of the more interesting characteristics of the respondents can be noted with only a brief reference to these figures. For instance, 65.3 per cent of the total usable returns came from teachers in public institutions. Moreover, most of the respondents (45.1 per cent) were in the age interval of 26-45 years with

TABLE II  
STRATIFICATION OF DATA

| <u>Criteria</u>             | <u>Number<br/>In Group</u> | <u>Per Cent<br/>Of Total</u> |
|-----------------------------|----------------------------|------------------------------|
| Type of Institution         |                            |                              |
| Public                      | 96                         | 65.3                         |
| Private                     | 29                         | 19.7                         |
| Denominational              | 22                         | 15.0                         |
|                             | <u>147</u>                 | <u>100.0</u>                 |
| Age                         |                            |                              |
| Less than 25                | 18                         | 12.2                         |
| 26-45                       | 59                         | 40.1                         |
| 46-60                       | 56                         | 38.2                         |
| Over 60                     | 14                         | 9.5                          |
|                             | <u>147</u>                 | <u>100.0</u>                 |
| Highest Degree Held         |                            |                              |
| Bachelors                   | 0                          | 0                            |
| Masters                     | 38                         | 25.9                         |
| Doctorate                   | 107                        | 72.8                         |
| Other                       | 2                          | 1.3*                         |
|                             | <u>147</u>                 | <u>100.0</u>                 |
| Area Where Degree Received  |                            |                              |
| East                        | 40                         | 27.2                         |
| Midwest                     | 47                         | 32.0                         |
| South                       | 23                         | 15.6                         |
| West                        | 36                         | 24.5                         |
| Foreign                     | 1                          | .7                           |
|                             | <u>147</u>                 | <u>100.0</u>                 |
| Teaching Experience (Years) |                            |                              |
| Less than 5                 | 41                         | 27.9                         |
| 6-10                        | 32                         | 21.8                         |
| 11-20                       | 47                         | 32.0                         |
| 21-30                       | 20                         | 13.6                         |
| More than 30                | 7                          | 4.7                          |
|                             | <u>147</u>                 | <u>100.0</u>                 |

TABLE II (continued)

| <u>Criteria</u>           | <u>Number<br/>In Group</u> | <u>Per Cent<br/>Of Total</u> |
|---------------------------|----------------------------|------------------------------|
| Religious Preference      |                            |                              |
| Catholic                  | 24                         | 16.3                         |
| Jewish                    | 5                          | 3.4                          |
| Protestant                | 97                         | 66.0                         |
| Other                     | 21                         | 14.3**                       |
|                           | <u>147</u>                 | <u>100.0</u>                 |
| Area Reared               |                            |                              |
| East                      | 34                         | 23.1                         |
| Midwest                   | 52                         | 35.4                         |
| South                     | 32                         | 21.8                         |
| West                      | 24                         | 16.3                         |
| Foreign                   | 5                          | 3.4                          |
|                           | <u>147</u>                 | <u>100.0</u>                 |
| Size of City Where Reared |                            |                              |
| Less than 25,000          | 62                         | 42.2                         |
| 25,001-100,000            | 28                         | 19.0                         |
| 100,001-500,000           | 25                         | 17.0                         |
| 500,001-1,000,000         | 10                         | 6.8                          |
| More than 1,000,000       | 22                         | 15.0                         |
|                           | <u>147</u>                 | <u>100.0</u>                 |
| Parent's Occupation       |                            |                              |
| Blue-collar               | 41                         | 27.9                         |
| White-collar              | 49                         | 33.3                         |
| Professional              | 41                         | 27.9                         |
| Other                     | 16                         | 10.9***                      |
|                           | <u>147</u>                 | <u>100.0</u>                 |
| Present Residence         |                            |                              |
| East                      | 32                         | 21.8                         |
| Midwest                   | 36                         | 24.5                         |
| South                     | 40                         | 27.2                         |
| West                      | 39                         | 26.5                         |
|                           | <u>147</u>                 | <u>100.0</u>                 |

\*Two respondents possessed LLB degrees

\*\*This group consisted primarily of agnostics and non-denominational.

\*\*\*Included in this classification were nine sons of farmers and seven sons of self-employed parents.

the 46-60 years category running a close second (38.2 per cent). Of the 147 professors replying, 72.8 per cent held doctorate degrees, and more of the highest degrees held (32 per cent) were earned in the Midwest than in any other single region. In addition, the Midwest was the region where many (35.4 per cent) of the respondents spent their early years.

In general, the teaching experience of the professors clustered in one of two classifications. The largest group (32 per cent) was composed of those with 11-20 years experience while the next largest category (27.9 per cent) referred to those with experience of less than five years. The Protestants exhibited a definite majority (66 per cent) relative to religious preference, and more (33.3 per cent) professors' fathers were employed in white-collar positions than in any other occupational classification.

Reference will be made from time to time concerning these characteristics, and their significance will be discussed in detail in the analysis to follow. But first, an explanation of the research vehicle used is in order.

#### Construction of the Questionnaire

Since the study was designed to uncover psychological differences in the meaning of methodological concepts to various groups, it immediately became evident that a special measuring technique was needed. The device selected was the

semantic differential (hereafter the SD) developed by Osgood, Suci and Tannenbaum<sup>3</sup> as a method of measuring connotative meanings.

Logic of the Semantic Differential. The SD assumes the existence of a "semantic space" which is an area of unknown dimensionality and is Euclidian in character.<sup>4</sup> The measuring technique defines a concept as a point in this space. Fundamentally, the objective is to differentiate the meanings of concepts or the meanings of the same concept to various groups or individuals.

In order to illustrate the operations of the SD, assume it has been determined that there are two basic dimensions of meaning relative to methodological concepts. These dimensions will be labeled EVALUATIVE (to reveal if the concept is "good" or "bad") and POTENCY (to define the degree of "goodness" or "badness"). With this in mind the geometric or spatial properties of this two dimensional space can be illustrated. Note the coordinates on the following page.<sup>5</sup>

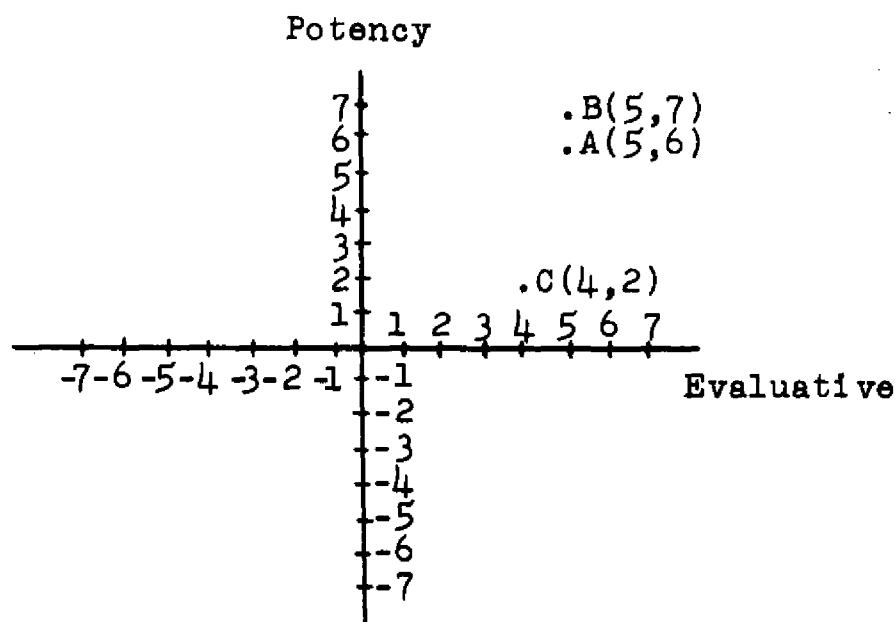
If a concept, such as empiricism, has an ordered pair of numbers indicating its coordinates within the "space," say

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<sup>3</sup>Charles E. Osgood, George J. Suci and Percy H. Tannenbaum, The Measurement of Meaning, The University of Illinois Press, Urbana, Illinois, 1957.

<sup>4</sup>Ibid., p. 25.

<sup>5</sup>Fred N. Kerlinger, Foundations of Behavioral Research, Holt, Rinehart and Winston, Inc., New York, 1966, pp. 565-566.



point  $A = (5,6)$ , properties of its meaning are revealed by these numerical values. This ordered pair gives an indication of the concept's "absolute meaning" from which an additional property of "distance" or "relative meaning" can be derived. Within the semantic space those concepts whose ordered pairs place them near each other, such as  $P_A(5,6)$  and  $P_B(5,7)$  may be said to possess similar connotations.

As one might expect, because of the Euclidian character of the semantic space, the measure of distance between concepts is simply the generalized geometric, linear distance formula. Therefore, to compute the distance ( $D$ ) between the concepts  $A$  and  $C$ , where  $d$  is the algebraic difference between the coordinates on a specific dimension (evaluative or potency), one would proceed in the usual manner. First, square each of the differences between the coordinates for each dimension and

sum the squared differences so that

$$\sum d^2_{A,C} = \sum (E_A - E_C)^2 + \sum (P_A - P_C)^2 \quad \text{where}$$

$E_i$  = the coordinate measuring the evaluative dimension for the  $i$ th point

$P_i$  = the coordinate measuring the potency dimension for the  $i$ th point

Then extracting the square root of the sum one obtains:

$$\begin{aligned} D_{A,C} &= \sqrt{\sum (E_A - E_C)^2 + \sum (P_A - P_C)^2} \\ &= \sqrt{\sum d^2_{A,C}} \end{aligned}$$

However, these computations assume that quantitative values for the coordinates have been derived. Therefore, before continuing the necessary prerequisite steps will be analyzed.

Concept Selection. The first step in developing the SD was to select the concepts to be tested against a series of scales. As the form in APPENDIX A illustrates, six phrases were selected to serve as the stimuli. Although a greater number would have been desirable, limitations imposed by time and the importance of a large return made restraint an absolute necessity.

It was recognized in the beginning that many potential respondents would find some of the concepts unfamiliar. To combat this "built-in bias" two steps were taken. The first



attempt to minimize apprehension was to use a rather simple stimuli to introduce the pattern of response. Therefore, since it could be a priori assumed that most professors of management have definite opinions about the nature of their subject matter, the "present state of management theory" was placed first as an "interest getter." The second and third stimuli were included to test epistemological perspectives and were followed by two phrases dealing with value judgments. Finally, a concept relating to the political convictions of the professor was placed last, save for the page designed to obtain classification data.

In addition, a brief yet general explanation of the "stimuli phrase" was included under concepts two, three, four and five. This was done in an effort to establish a reasonably successful communicative foci. As a final attempt to insure uniformity of conceptualization, the instructions included on the form asked the respondents to answer on the basis of how the phrases "should" relate to management theory (excluding concepts one and six). This was deemed necessary due to the fear that one subject might evaluate the "present state of management theory" relative to all stimuli while others would answer on the basis of their subjective preference. The latter was concluded to be the most useful alternative for analysis.

Once the concepts were selected only the scales remained unnamed. The process by which the scales were chosen is the subject of the following section.

Choice of Scales and Reversals. In the survey each person was asked to judge a concept against ten bipolar adjective scales which had been tested in a pilot study conducted among a dozen graduate students at Louisiana State University. For purposes of the pretest, twelve scales were included, but two were eliminated because of disproportionately large variances which indicated no meaningful connotation between scale and stimuli existed. As a result the questionnaire in APPENDIX A illustrates the final form which was actually mailed. The ten surviving scales were as follows:<sup>6</sup>

- (E) good-bad
- (E) fair-unfair
- (E) valuable-worthless
- (E) successful-unsuccessful
- (E) complete-incomplete
  
- (P) strong-weak
- (P) brave-cowardly
- (P) free-constrained
- (P) deep-shallow
- (P) wide-narrow

The E or P which precedes each adjective pair refers to the dimension they were designed to measure, i.e., evaluation or

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<sup>6</sup>These scales were selected from both lists offered by Osgood, Suci and Tannenbaum, op. cit., pp. 43 and 53-56.

potency. These bipolar adjective pairs were selected on the basis of two criteria: factor representativeness and relevance to concepts used. The relevance choice was purely intuitive, but the factor representativeness was an objective measure obtained via Osgood's factor analysis.<sup>7</sup>

When a subject was asked to judge a concept similar to the following,

"Empiricism"

Good   X   :        :        :        :        :        :        Bad

Fair        :        :   X   :        :        :        :        Unfair

each judgment served to locate the stimulus as a point in the semantic space. Each meaning thus developed had two essential properties--direction from the origin of the space (depending upon the polar adjective checked) and distance from the origin (relating to the extremeness of the scale position marked).<sup>8</sup>

Prior use of the SD has noted a tendency of respondents to develop a "system" or "pattern" of replying which resulted in a failure to think and consciously choose various alternatives along the scales. In order to minimize this inclination, four of the scales (one, two, seven and nine) were reversed

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<sup>7</sup>Ibid., p. 26.

<sup>8</sup>Ibid., p. 100.

placing the "positive" alternative at the extreme right instead of the left. The rotation was accomplished in a purely random manner making use, once again, of a table of random numbers.

After the scale selection, elimination and rotation had been completed, all the necessary components were available for the construction of the questionnaire. It can be noted that Osgood's Form II, with each stimuli occupying a separate page, was adopted.

In addition, seven "spaces" were positioned between the bipolar adjective pairs. For computational convenience a number ranging from seven to one was assigned to each block beginning with seven at the most extreme positive adjective and reducing successively by one to one at the most extreme negative adjective. Thus, if the respondent checked the space nearest "good" on a good-bad continuum, his reply was assigned a numerical value of seven. On the other hand, if he marked the space nearest "bad" it was assigned a value of one. Each space in between was designated as an incremental value of one throughout the seven space range. Thus, a reply to any bipolar adjective scale was assigned a value from one to seven depending upon the extremeness and direction of the response. The significance of this explanation will become evident later when reference is made to the mean values of the various scales for different groups.

The complete questionnaire consisted of ten pages (one page cover letter, two pages of instructions, six concepts, and a classification data page). Each form was accompanied by a return envelope to be mailed under a business reply permit.

Uniqueness of the Problem. The above discussion relating to the logic of the SD is general and can be applied to any instrument so constructed. For this reason, it was described in terms of the differentiating of two concepts relative to a given group. However, in an effort to investigate the hypotheses of the proposed study a somewhat different approach was required. Rather than noting differences relative to concepts, it was necessary to examine the divergency between two groups (say Eastern and Western professors) with respect to the meaning of a single concept (i.e., empiricism). In doing this, one would essentially be analyzing the relative positions of the central tendencies of two uncorrelated "clouds" of points in the semantic space.<sup>9</sup> Therefore, although this analysis was approached from a different angle, it too dealt with the distance between two points in a semantic space.

After all the replies were received, the data were processed on the Louisiana State University IBM 7040 research

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<sup>9</sup>Ibid., p. 90

computer system. In an effort to confirm or disconfirm the hypotheses, a statistical analysis of the data was required.

### Statistical Procedure

In considering the quantitative comparisons of similarity and difference, one's thoughts immediately anticipate the use of product-moment correlation analysis as an index of similarity. However, as Osgood notes, the possibility of consistent covariance, which definitely proved a factor in the study, can result in intercorrelations approaching  $r = 1.00$  despite gross absolute discrepancies.<sup>10</sup> For this reason the generalized distance measure (D) and a commonly used test of significance were used as the primary analytical methods.

Test of Significance. Although the D measure provides an adequate index of relative difference, it reveals little with respect to statistical significance.<sup>11</sup> To insure that

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<sup>10</sup>Ibid.

<sup>11</sup>Because of this limitation, the "t" test was employed. Since the standard deviation ( $\sigma$ ) of the universe was not known, it was necessary to estimate its magnitude via sample information. Initially, the null hypothesis  $\mu_1 = \mu_2$  and alternative hypothesis  $\mu_1 \neq \mu_2$  were established and the "t" test applied using the relationship

$$t = (D - H_d) / s_d \quad \text{where}$$

$$D = \bar{X}_i - \bar{X}_j$$

$H_d$  = hypothetical difference between two population means ( $\mu_i - \mu_j$ ) which in this case is zero

the differences involved were significant, a null hypothesis, stating that  $\mu_i = \mu_j$ , or the mean of population<sub>i</sub> equaled the mean of population<sub>j</sub> was established. If the null hypothesis proved probabilistically false on the basis of sample information at  $\alpha = .05$  for a sufficient number of scales, the groups were considered to think significantly different with respect to the concept.

Procedurally, this was accomplished by sequentially stratifying the respondents with respect to the factors to be scrutinized. The test of significance was then applied to the mean values by scales for each combination of two groups. Therefore, for each combination, sixty tests (6 concepts x 10 scales each) were required. Based on this analysis a decision rule was established for the determination of statistical difference.

The Fundamental Decision Rule. The basic criterion for

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11 (continued)

$s_d = \sqrt{s^2/n_1 + s^2/n_2}$  which is the estimated standard error of the difference between two means.

$s^2 = (n_1 s_1^2 + n_2 s_2^2 / n_1 + n_2 - 2)$  or the weighted average of the individual sample estimates of the variances of the populations based on sample size.

Additional information on the specific aspects of the "t" test can be found in any basic statistical inference text such as Samuel B. Richmond, Statistical Analysis, 2nd ed., The Ronald Press, New York, 1964, pp. 190-193.

determining the significance of the difference between groups was as follows:

If at least one of the five scales measuring a given dimension (first five evaluative and second five potency for each concept) discredited the null hypothesis so that probabilistically  $\mu_i \neq \mu_j$  the entire concept was considered different with respect to the  $i$  and  $j$  groups.

Since the rationale for such a rule is not immediately obvious, a brief explanation is offered. At  $\alpha = .05$  (this level of significance was used throughout), one would expect five out of every 100 scales to show a significant difference as the result of pure chance. If, however, more than five scales out of 100 show a significant difference ( $\mu_i \neq \mu_j$ ), some force can be assumed at work other than random variation. In the present study a single significantly different scale for a dimension of a given concept would actually be 20 per cent (one out of five) significant or, on the average, the same as 20 out of 100. Thus, as Osgood points out, the significant difference of one dimension insures the difference of the entire concept.<sup>12</sup> If one cannot accept this explanation, it may be noted that even one significant scale out of ten (total for both dimensions) is twice the number expected due to chance at  $\alpha = .05$ .

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<sup>12</sup>Osgood, Suci and Tannenbaum, op. cit., p. 100.



An Example. It is often easy for a writer, enthusiastically involved in a topic, to assume universal familiarity with his subject. Lest this criticism be applied, a brief example will now be given to illustrate the testing procedure. Referring to the questionnaire in APPENDIX A one can note that each question on the last page is designed to subclassify the respondents with respect to a factor judged, by a consensus of knowledgeable persons in the field, to be influential in the formation of methodological convictions. For simplicity, note question one in which all respondents fell into one of three alternative classification choices (members of the faculties of public, private or denominational schools). Because of the mutually exclusive character of this classification scheme, sorting with respect to the alternative possibilities presented no problem. Once the groups were sorted, mean values were computed for each scale and every concept by substratified groups. The result of these computations was an array of sixty means (6 concepts x 10 scales) for each group. The mean values were then tested by combinations of two groups to see if significant differences existed with respect to any scales. In other words, private school faculties were tested against public school faculties, private against denominational and denominational against public. The number of combinations tested for each question (environmental factor) is given by the following formula:

$$\binom{m}{x} = \frac{m!}{x! (m-x)!} \quad \text{where}$$

$m$  = number of alternative classifications possible

$x$  = number of groups to be analyzed per comparison

In the above example  $\binom{3}{2} = \frac{3!}{2!1!} = 3$ .

After the tests had been conducted the decision rule was applied to determine if any two groups showed a statistically significant difference with respect to sample means. The results of the tests were then listed in APPENDIX B, Table VI. After the tests of significance were completed, additional analysis was possible via computation of D values and the use of visual profiles.

### Analysis Relative to Hypotheses

Although examples such as the one above may be offered, the full importance of the tests can be appreciated only with respect to the hypotheses to be investigated. Therefore, the hypotheses will be reiterated and examined in the following sections.

#### The Major Hypothesis

The major hypothesis advances the proposition that: professional attitudes toward methodological issues are a function of the past and present environmental influences of the researcher and/or teacher.

Initially, one might ask what would be required to confirm this hypothesis. Fundamentally, it is necessary to test

all subclassifications with respect to the environmental factors noted in each question on the classification page of the questionnaire. If, upon testing, it can be noted that significant differences exist relative to the substratums present, the factor indicated by the question can be said to be a determinant of difference. In the interest of brevity the concepts will be coded as follows:

- Concept A - The Present State of Management Theory
- Concept B - Empiricism in Management Theory
- Concept C - The A Priori in Management Theory
- Concept D - Positive-Descriptive Methodology
- Concept E - Normative-Prescriptive Methodology
- Concept F - Political Conservatism

In addition, environmental factors will be referred to by the following numerical values:

- Category 1 - Type of institution in which professor teaches
- Category 2 - Age of teacher
- Category 3 - Highest degree held
- Category 4 - Geographical area where degree received
- Category 5 - Teaching experience
- Category 6 - Religious preference
- Category 7 - Geographical area where professor was reared
- Category 8 - City size where professor was reared
- Category 9 - Parent's occupation
- Category 10 - Geographical area of present residence

Therefore, the necessary condition for the confirmation of the major hypothesis is the existence of differences--differences resulting from environmental factors. In order to show this, however, some indicator of gross difference must be constructed which will measure total variation in meaning.

The Ratio of Comparison. The ratio of comparison is given by the following relationship.

$$C_r = d / \binom{m}{2} \text{ where}$$

- $C_r$  = ratio of comparison
- $\binom{m}{2}$  = number of combinations (comparisons) possible with respect to a given factor where m is the number of classification alternatives possible and the two (2) illustrates that all comparisons take place between two groups
- d = the number of combinations of two groups showing a significant difference

Therefore, if, as in question one, the respondent could select one of three types of institutions in which he taught, m would assume a value of three (3) so that  $\binom{3}{2} = 3$ . Assuming further that of the three comparisons (public-private, private-denominational, and denominational-public), only one (public-denominational) showed a significant difference with respect to a given concept (empiricism). Therefore, the ratio would equal

$$C_r = d / \binom{m}{2} = 1/3 = .33.$$

This result could be interpreted as revealing that 33 per cent of the combinations showed a significant difference in thinking with respect to empiricism.

One can easily see that the same comparison could be made for all subclassifications relative to each of the ten environmental factors by concept. The maximum value that  $C_r$

for a given concept could assume would be one ( $C_r = 1$ ). Such a value is possible if and only if all stratifications thought significantly different relative to the concept so that  $d = \binom{m}{2}$  and,

$$C_r = d / \binom{m}{2} = 1.$$

If each concept exhibited a  $C_r = 1$  relative to a given environmental factor, it would be possible to derive an

$$S_r = \sum_{i=1}^6 C_r = 6.$$

The  $S_r$  in this case represents the "summed" or "super" comparison ratio and is used as a measure of overall difference among groups with respect to a given environmental factor.

An  $S_r \rightarrow 6$  would obviously be quite unusual and certainly unnecessary for confirmation of the major hypothesis. As a matter of fact, an  $S \rightarrow 3$  appears sufficiently large to allow an inference that the connotative meanings of the concepts to the various combinations of subgroups with respect to an environmental factor are different. Two reasons are advanced in support of this position. The first relates to the fact that only statistically significant differences were considered. Therefore, probabilistically there was always the chance that the null hypothesis ( $\mu_i = \mu_j$ ) might have been accepted when in fact it was false. Such an erroneous acceptance of a false hypothesis would prevent  $S_r \rightarrow 6$ . Another complication which

could have prevented an extremely large value of  $S_r$  was a bias within the classification alternatives themselves. Some factors such as "city size where a professor was reared," tended to have alternatives that "fused" together in the center. Thus, it may have been difficult to separate differences in groups such as those containing professors reared in cities with populations of 50,000 as opposed to those from cities of 125,000. On the other hand, very definite variations might have existed between professors reared in extremely large as opposed to extremely small cities. In this case, an environmental factor could arise as influential only in extreme cases with a large "gray" area in between. To combat the elimination of any such "influential extremes" an  $S \rightarrow 3$  was considered to be an indication of sufficient difference to allow a confirmation of the major hypothesis.

Analysis of the Data. Table III is a "macro summation" of the information contained in APPENDIX B which contains the significant results of the individual "t" tests. To illustrate how the individual values in Table III were obtained, turn to APPENDIX B, Table VI. The tables in APPENDIX B correspond respectively to the successive columns of Table III. In addition, each exhibit in the appendix lists first the various groups to be compared followed by a  $\binom{m}{x}$  value. Each comparison is then noted (say Public-Private) along with the proper number

TABLE III  
THE SUMMED COMPARISON RATIO

|         | Categories<br>$C_r$ |            |             |            |            |            |            |            |             |            |
|---------|---------------------|------------|-------------|------------|------------|------------|------------|------------|-------------|------------|
|         | 1                   | 2          | 3           | 4          | 5          | 6          | 7          | 8          | 9           | 10         |
| A       | .33                 | .00        | 1.00        | .67        | .60        | .17        | .30        | .10        | .00         | .33        |
| B       | .33                 | .33        | 1.00        | .50        | .40        | .17        | .50        | .10        | .17         | .83        |
| C       | .33                 | .17        | 1.00        | .67        | .40        | .17        | .60        | .10        | .00         | .67        |
| D       | .00                 | .33        | 1.00        | .33        | .20        | .17        | .40        | .20        | .00         | .33        |
| E       | .00                 | .00        | 1.00        | .50        | .10        | .17        | .80        | .40        | .00         | .67        |
| F       | <u>.00</u>          | <u>.40</u> | <u>1.00</u> | <u>.17</u> | <u>.20</u> | <u>.50</u> | <u>.40</u> | <u>.30</u> | <u>1.00</u> | <u>.50</u> |
| $S_r =$ | .99                 | 1.23       | 6.00        | 2.84       | 1.90       | 1.35       | 3.00       | 1.20       | 1.17        | 3.33       |

Note: See page 197 for code of concepts and categories.

of degrees of freedom and the critical values of "t." The calculated "t" values are then listed, by scale, for each concept with respect to the groups which exhibited a significant difference. Any scale which possessed a calculated "t" whose absolute value was greater than the critical "t" was significant.

In the case at hand, public and private school faculties (see column one) thought significantly different relative to concepts A, B and C. However, the public-denominational and denominational-private comparisons revealed no significant differences relative to any concept. Therefore, since the meaning of concept A was tested by three comparisons and had a significantly different meaning to only one combination of the three compared, its  $C_r = d/\binom{m}{x} = 1/3 = .33$ . This was entered as the first figure in column one of Table III. The remaining columns were constructed in a similar manner by noting the values of  $\binom{m}{x}$  for each environmental factor and dividing it into the number of times a combination of two groups showed a significant difference relative to a concept. To insure the procedure is understood, note one more example. Column four of Table III corresponds to Table IX and relates to the geographical area where the respondents' highest degrees were received. Note that there were six possible combinations of two groups (given by the  $\binom{m}{x}$  value) from



the four groups used as a basis for stratification. Out of these six combinations of two, four (East-West, West-Midwest, East-South and Midwest-South) showed a significant difference with respect to concept A. Thus,  $C_r = d/\binom{m}{x} = 4/6 = .67$  was entered as the first value in column four of Table III.

Now that the analytics of the "summed comparison ratio" table have been explained, the table's function in analyzing the major hypothesis may be expounded. Reference to the final figure in each column gives a value for  $S_r$  or the overall measure of difference with respect to each environmental factor tested. A brief look at the  $S_r$  values reveals that three factors assumed a value of  $S_r \rightarrow 3$  and could be considered overall determinants of difference. In addition, one factor (geographical area where highest degree was received) was sufficiently close to 3 (2.84) as to be included in the overall determinant classification. But what does this say relative to the major hypothesis?

A Suggested Interpretation. The only factor resulting in  $S_r = 6$  was the comparisons based on highest degree held. Because of the extremely small number of respondents falling into classes one (bachelors degree) and four (all other degrees), only masters and doctorate degree holders were compared. A significant difference was shown with respect to every concept. As the assumed positive signs before all

calculated "t" values in Table VIII, APPENDIX B illustrate, the holders of masters degrees reflected more favorable and stronger connotations relative to all issues. This proposition can be advanced because the mean value for each scale was computed by groups and the mean of scale<sub>1</sub> for group three (doctorate) was subtracted from the corresponding scale for group two (masters). Hence,  $\bar{X}_2 - \bar{X}_3$  could assume a positive value if and only if the means for group two were numerically larger than the corresponding means for group three (i.e.,  $\bar{X}_2 - \bar{X}_3 > 0$  or  $\bar{X}_2 > \bar{X}_3$ ). These larger mean values for group two could only result from the selection of more extreme spaces toward the positive bipolar adjective. Perhaps the only explanation for this result is that one of the effects of doctoral education is the development of a more "scientifically skeptical" attitude that prevents one from favoring extreme "black" and "white" alternatives.

A rather interesting situation developed relative to the other major determinants of difference. Every major determinant, with the exception of the highest degree held, related directly to a geographically influenced factor. Specifically, geographical area where the highest degree was received ( $S_r = 2.84$ ), geographical area where respondent was reared ( $S_r = 3.00$ ) and present residence ( $S_r = 3.33$ ) showed the greatest number of significant differences with respect to all methodological beliefs.

In view of this, it seems that environmental factors do influence methodological convictions for if this were not true, there would be no explanation for the existence of the significant differences. In effect an  $S_r \rightarrow 3.00$  says that relative to at least fifty per cent of the concepts tested the groups compared entertained significantly different opinions. If the respondents were stratified on the basis of geographical area where they presently resided, an  $S_r \rightarrow 3$  would illustrate that at least one half of the total comparisons made, among the various strata, showed a significant difference. From this it could be inferred that geographical residence is a determinant of difference with respect to methodological beliefs.

The fact that some factors assumed an  $S_r$  value greater than three while others did not provides the sufficient condition for confirmation of the major hypothesis. Such a finding is sufficient for it does, in fact, say that methodological convictions are influenced by varying environmental conditions. Admittedly, the hypothesis would have been more directly confirmed if it had stated, "geographical factors influence professional attitudes toward methodology." Be that as it may, the confirmation of the major hypothesis was important because it provides the necessary condition for further analysis of the minor hypothesis. Therefore, the conceptual simplicity of the major hypothesis should not

depreciate its value for without its prior confirmation the minor one would be meaningless and entirely unnecessary.

### Minor Hypothesis

The minor hypothesis states:

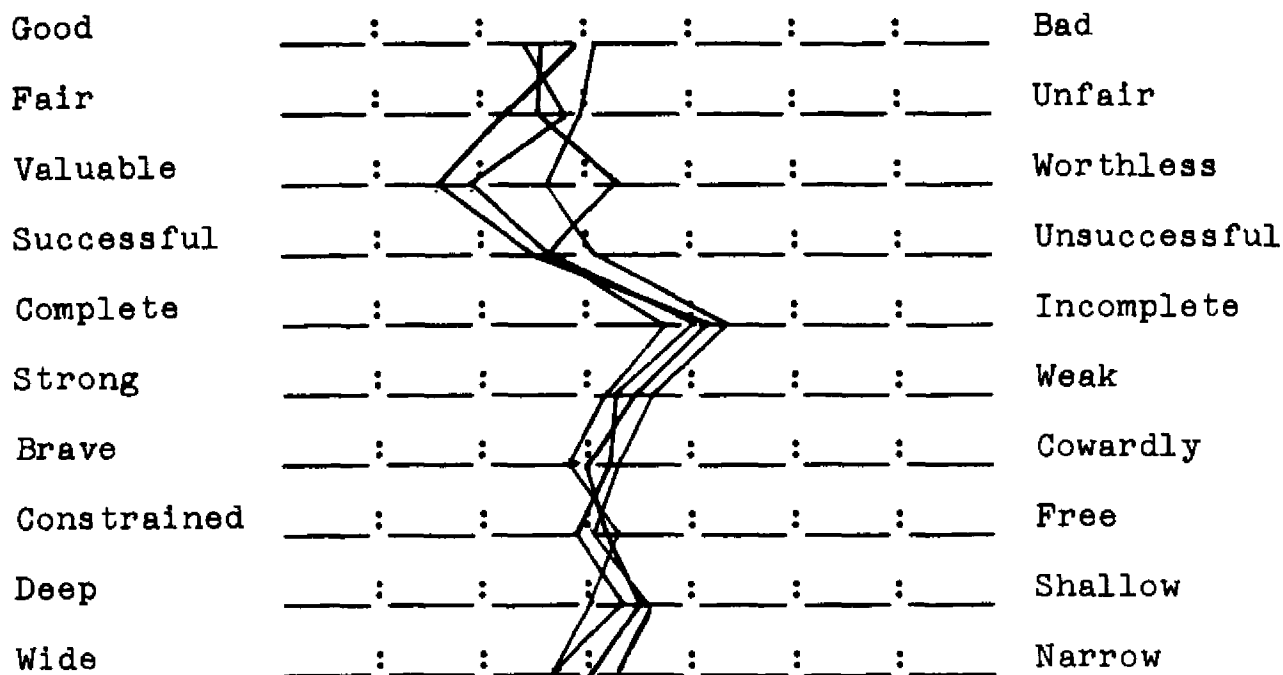
Specific environmental factors do not influence the formation of all methodological convictions with equal intensity. Therefore, the primary determinant of one methodological belief may or may not be the major determinant of another.

The macro analysis employed in the confirmation of the major hypothesis contributes only partially to the confirmation of the minor one. As with most macro investigations, the preceding analysis leaves much to be desired concerning micro elements. It is especially tempting to ask if, perhaps, some of those environmental factors elevated to the status of overall determinants might prove unimportant relative to any given concept. This situation appears to have developed in column four of Table III. Although the geographical area where the respondent's highest degree was received appeared important as an overall influence ( $S_r = 2.84$ ), it was exposed as quite uninfluential relative to concept F ( $C_r = .17$ ). Obviously, this raises questions which require additional analysis of the individual values comprising  $S_r$ . Such questions can be answered by a closer examination of the relationship between each concept and the various environmental factors.

Concept A. This concept relates to the "present state of management theory" and its highest ratio of comparison ( $C_r = .67$ ) is shown in the first row of column four. One could infer from this that the geographical area where the respondent's highest degree was received (as indicated by column four) constituted the primary influence on his appraisal of contemporary management theory. Figure 14 provides a visual profile of the mean responses of the professors educated in the areas specified by the legend at the bottom of the diagram.

It may be noted that professors educated in the Southern schools felt that management theory was in a "better" state than did any other group. Such a conclusion was reached by noting the deeper penetration of the purple line toward the positive (left) side of the bipolar adjective pairs. An additional observation may be drawn from the overall pattern of responses by all groups. This pattern indicated that the greatest differences were relative to absolute gross magnitudes on the evaluative scales rather than diametrical opposition of connotative meanings. For instance, the evaluative D scores in Table IV show that the largest linear separation in the semantic space with respect to concept A existed between Southern and Midwestern educated professors ( $D_E = 1.21$ ). The second largest relative difference was between those

"THE PRESENT STATE OF MANAGEMENT THEORY"



Legend: (By geographical area where highest degree was received)

East       —  
 West       —  
 Midwest   —  
 South      —

FIGURE 14

SEMANTIC PROFILE ON CONTEMPORARY THEORY

TABLE IV  
EVALUATIVE D MATRICES CORRESPONDING TO  
THE PRIMARY DETERMINANTS OF DIFFERENCE  
WITH RESPECT TO TESTED CONCEPTS

| <u>Concept A</u> |     |     |      |      |
|------------------|-----|-----|------|------|
|                  | 1   | 2   | 3    | 4    |
| 1                | .00 | .40 | .66  | .66  |
| 2                |     | .00 | 1.02 | .53  |
| 3                |     |     | .00  | 1.21 |
| 4                |     |     |      | .00  |

(By geographical area where highest degree was earned)

| <u>Concept B</u> |     |      |      |      |
|------------------|-----|------|------|------|
|                  | 1   | 2    | 3    | 4    |
| 1                | .00 | 1.08 | 1.09 | 1.74 |
| 2                |     | .00  | .67  | .84  |
| 3                |     |      | .00  | .91  |
| 4                |     |      |      | .00  |

(By geographical area of present residence)

| <u>Concept C</u> |     |      |      |      |
|------------------|-----|------|------|------|
|                  | 1   | 2    | 3    | 4    |
| 1                | .00 | 1.04 | 1.15 | 2.05 |
| 2                |     | .00  | .33  | 1.11 |
| 3                |     |      | .00  | .92  |
| 4                |     |      |      | .00  |

(By geographical area of present residence)

TABLE IV (continued)

| <u>Concept D</u> |     |     |      |      |      |
|------------------|-----|-----|------|------|------|
|                  | 1   | 2   | 3    | 4    | 5    |
| 1                | .00 | .71 | 1.06 | .96  | .80  |
| 2                |     | .00 | .72  | .91  | 1.27 |
| 3                |     |     | .00  | 1.09 | 1.42 |
| 4                |     |     |      | .00  | .80  |
| 5                |     |     |      |      | .00  |

(By geographical area where reared)

| <u>Concept E</u> |     |     |     |      |      |
|------------------|-----|-----|-----|------|------|
|                  | 1   | 2   | 3   | 4    | 5    |
| 1                | .00 | .51 | .82 | .66  | 2.25 |
| 2                |     | .00 | .51 | .95  | 2.53 |
| 3                |     |     | .00 | 1.23 | 2.74 |
| 4                |     |     |     | .00  | 1.98 |
| 5                |     |     |     |      | .00  |

(By geographical area where reared)

| <u>Concept F</u> |     |     |     |      |
|------------------|-----|-----|-----|------|
|                  | 1   | 2   | 3   | 4    |
| 1                | .00 | .45 | .65 | 1.10 |
| 2                |     | .00 | .28 | 1.38 |
| 3                |     |     | .00 | 1.64 |
| 4                |     |     |     | .00  |

(By parent's occupation)

Note: The alternative subclassifications are referenced by the numbers indicating the row and column. For instance if the distance between group<sub>1</sub> and group<sub>3</sub> is desired, move horizontally across the row<sub>1</sub> and vertically down column<sub>3</sub> until the desired cell is obtained.



teachers educated in the Midwest as opposed to the West ( $D_E = 1.02$ ). In each of these cases, however, only one of the five evaluative scales on the visual profile measuring concept A had a mean value which was located to the right (negative) side of the bipolar continuum. This result clearly indicates that all groups had a relatively "good" connotation of the present state of management theory. It is interesting to note that the one negative tendency was relative to the complete-incomplete scale. Once again it seems the groups were in agreement that although the "present state" was good, it was not complete and requires continued improvement. No astounding differences were noted on the potency scales, as evidenced by the D scores in Table V.

Concepts B and C. Collectively, concepts B and C constituted the epistemological issues examined in chapter two. Because both concepts were related to the same issues they provided an automatic consistency check on the factors examined. For instance, it was assumed that if any environmental factor proved to be an insignificant determinant of difference with respect to empiricism, it should likewise be unimportant relative to a priorism. A look at Table III shows consistently large and small  $C_r$  values in each column of the rows representing concepts B and C (rows 2 and 3). This truly amazing consistency adds a degree of reinforcement to the confidence with which the

TABLE V  
POTENCY D MARTICES CORRESPONDING TO  
THE PRIMARY DETERMINANTS OF DIFFERENCE  
WITH RESPECT TO TESTED CONCEPTS

| <u>Concept A</u> |     |     |     |     |
|------------------|-----|-----|-----|-----|
|                  | 1   | 2   | 3   | 4   |
| 1                | .00 | .62 | .34 | .49 |
| 2                |     | .00 | .75 | .60 |
| 3                |     |     | .00 | .44 |
| 4                |     |     |     | .00 |

(By geographical area where highest degree was earned)

| <u>Concept B</u> |     |     |     |      |
|------------------|-----|-----|-----|------|
|                  | 1   | 2   | 3   | 4    |
| 1                | .00 | .80 | .78 | 2.00 |
| 2                |     | .00 | .65 | 1.30 |
| 3                |     |     | .00 | 1.81 |
| 4                |     |     |     | .00  |

(By geographical area of present residence)

| <u>Concept C</u> |     |     |     |      |
|------------------|-----|-----|-----|------|
|                  | 1   | 2   | 3   | 4    |
| 1                | .00 | .57 | .59 | 1.16 |
| 2                |     | .00 | .73 | 1.10 |
| 3                |     |     | .00 | .75  |
| 4                |     |     |     | .00  |

(By geographical area of present residence)

TABLE V (continued)

|   |  | <u>Concept D</u> |     |     |     |      |
|---|--|------------------|-----|-----|-----|------|
|   |  | 1                | 2   | 3   | 4   | 5    |
| 1 |  | .00              | .38 | .75 | .79 | 1.47 |
| 2 |  |                  | .00 | .74 | .87 | 1.70 |
| 3 |  |                  |     | .00 | .25 | 1.68 |
| 4 |  |                  |     |     | .00 | 1.47 |
| 5 |  |                  |     |     |     | .00  |

(By geographical area where reared)

|   |  | <u>Concept E</u> |     |     |      |      |
|---|--|------------------|-----|-----|------|------|
|   |  | 1                | 2   | 3   | 4    | 5    |
| 1 |  | .00              | .79 | .44 | .89  | 1.45 |
| 2 |  |                  | .00 | .74 | 1.18 | 1.99 |
| 3 |  |                  |     | .00 | .81  | 1.37 |
| 4 |  |                  |     |     | .00  | 1.83 |
| 5 |  |                  |     |     |      | .00  |

(By geographical area where reared)

|   |  | <u>Concept F</u> |     |      |      |
|---|--|------------------|-----|------|------|
|   |  | 1                | 2   | 3    | 4    |
| 1 |  | .00              | .76 | 1.12 | .43  |
| 2 |  |                  | .00 | .50  | .94  |
| 3 |  |                  |     | .00  | 1.32 |
| 4 |  |                  |     |      | .00  |

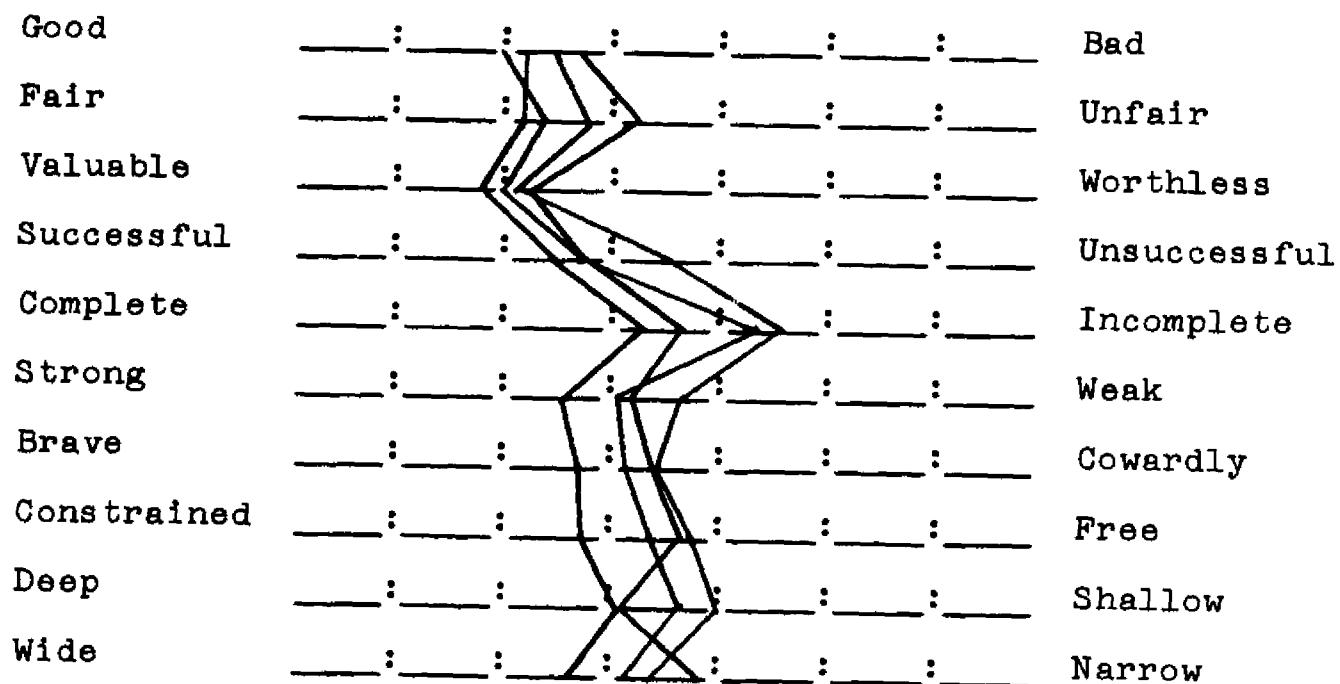
(By parent's occupation)

Note: For instructions on use of this table, see note at end of Table IV.

results are reported. Without such consistency one might ask, quite validly, why an environmental factor would cause differences of opinion relative to one epistemological issue and not with respect to the other.

Now that the criterion of consistency has been established, it may be noted by reference to column ten that the geographical area of present residence was the primary "influencer" of epistemological perspectives. Both the profiles (Figures 15 and 16) and objective D measures indicated that professors residing in the South and East thought most differently concerning these issues ( $D_E = 1.74$  and  $D_P = 2.00$  relative to empiricism while  $D_E = 2.05$  and  $D_P = 1.16$  with respect to the a priori). Although all four groups viewed empiricism as good (indicated by the penetration of all groups toward the left-hand polar extreme in Figure 15), the same agreement was not noted relative to a priori theory. Professors residing in the South seemed to favor both epistemological alternatives while the Eastern professor held a less favorable connotation of the a priori alternative. This is easily noted by the mean scale values traced by the red line which tends slightly toward the negative (right) side of the fourth position between the bipolar adjectives in Figure 16. Both the Western and Midwestern professors exhibited a neutral position relative to a priorism and showed no significant difference in their thinking on the matter.

"EMPIRICISM IN MANAGEMENT THEORY"

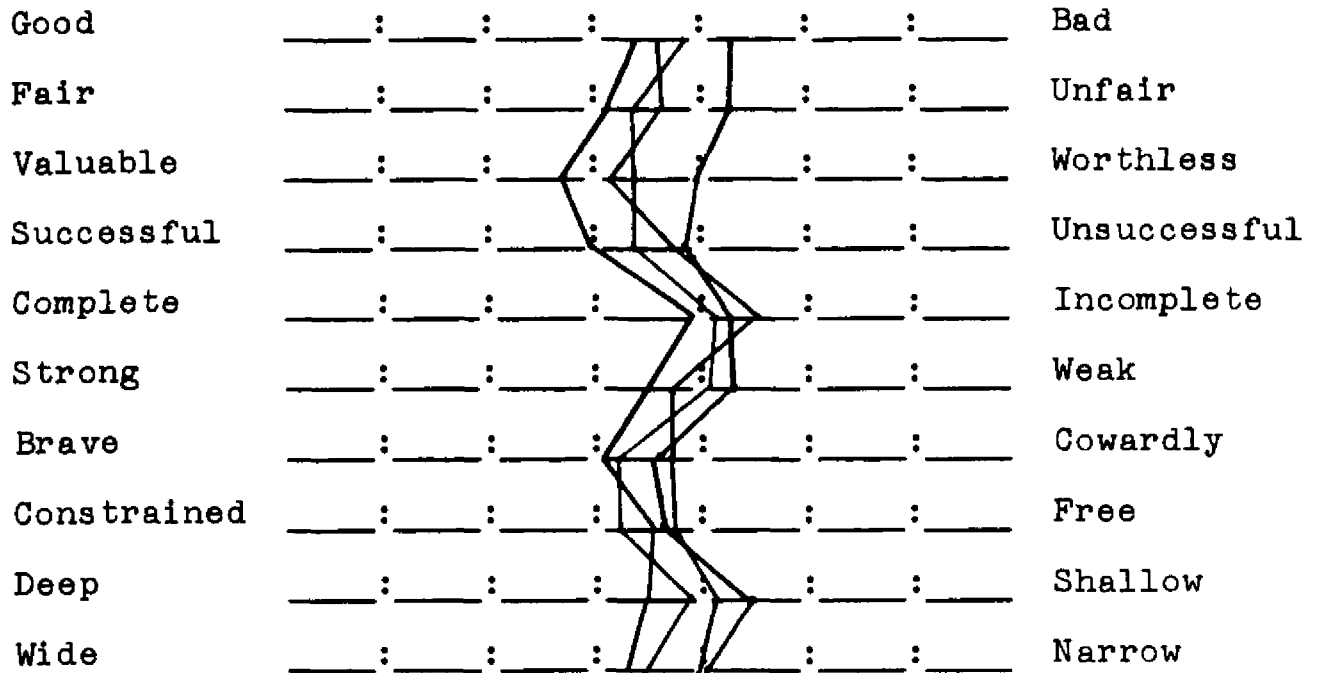


Legend: (By geographical area of present residence)

East       —  
 West       —  
 Midwest   —  
 South      —

FIGURE 15  
 EPISTEMOLOGICAL PROFILE A

"THE A PRIORI IN MANAGEMENT THEORY"



Legend: (By geographical area of present residence)

|         |         |
|---------|---------|
| East    | —       |
| West    | - - -   |
| Midwest | ...     |
| South   | - . - . |

FIGURE 16

EPISTEMOLOGICAL PROFILE B

Thus, three rather interesting inferences can be drawn concerning the epistemological perspectives of the respondents. First of all, the geographical area in which the professor resided appeared to be the most influential environmental factor in the formation of methodological beliefs. In addition, all groups with the exception of the Southern professors exhibited an exclusive empirical orientation. The professors who resided in the South, although entertaining a favorable connotation concerning empiricism, showed a greater appreciation of a prioristic methods than any other group. Finally, the epistemological concepts displayed a rather active potency dimension that was not evident on concept A. As a matter of fact, Table V illustrates that some of the largest linear separations between groups took place on the potency scales. In the writer's thinking, this situation indicated that more definite and established opinions existed concerning epistemology than was evident with respect to the present state of management theory.

Concepts D and E. Proceeding onward, concepts D and E may be labeled the value judgment issues. Once again the initial step was to note the consistency between the influence of each factor on the opinions formed relative to each concept. Unfortunately, the various factors did not show the same astounding consistency toward value judgment concepts as they

did toward epistemology. The inconsistencies were noted in columns seven and ten of Table III. Of the ten combinations of two groups compared relative to geographical areas where the respondents were reared (column seven) only four (.40) showed significantly different connotations relative to positive methodology. Of this same series of combinations, eight out of ten (.80) were significantly different with respect to the normative issue. One should note, however, that the .40 was the largest percentage difference evidenced by any single factor for concept D (i.e., .40 was the largest value contained in the row designating concept D). Thus, there exists a valid question as to whether or not this actually constituted an inconsistency. Another discrepancy developed in column ten (place of present residence) where the values were .33 and .67 respectively. It is the opinion of the writer that this situation resulted from a less familiar "cognitive framework" on the part of professors relative to the alternative value judgments positions.

In any event the two questionable cases did not constitute a large enough percentage of the total factors examined (20 per cent) to seriously affect the validity of the following analysis. Therefore, noting rows four and five of Table III one may observe that the geographical area where one was reared (column seven) was the most important determinant

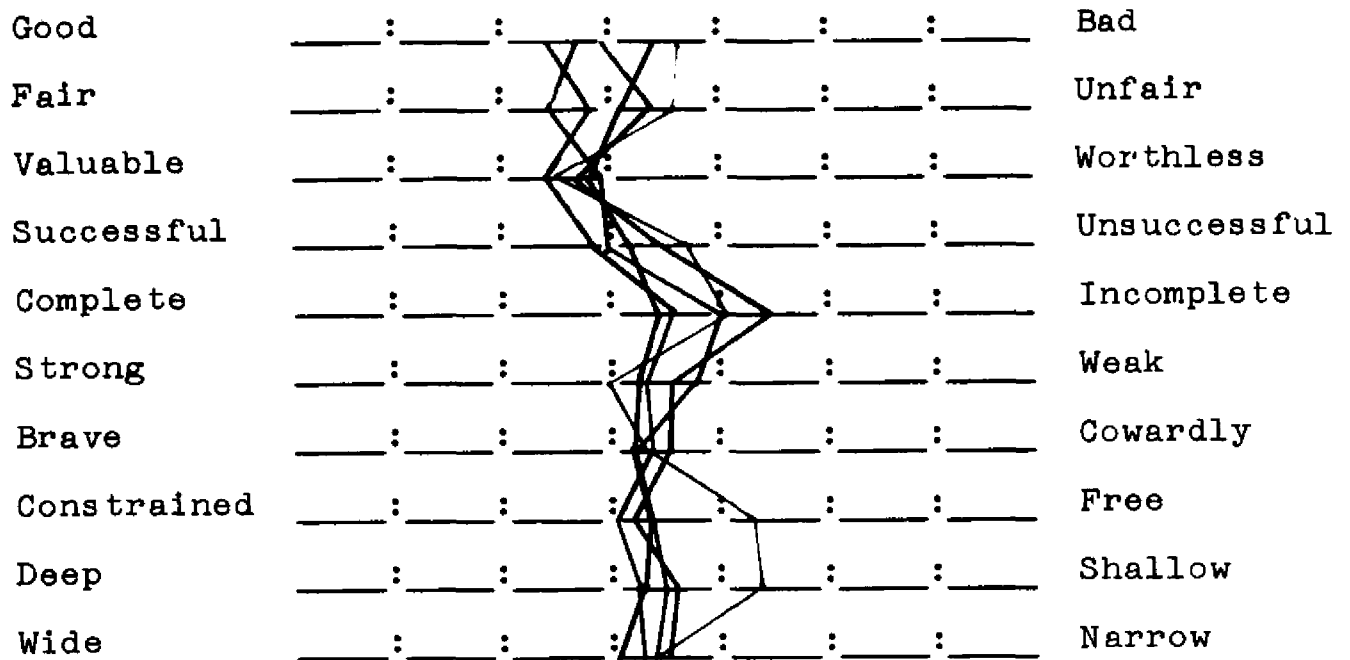


of difference in a professor's attitude toward the issues dealing with value judgments. Undoubtedly, the most obvious difference existed in the form of the "good" and "strong" connotations held by foreign born teachers (note Figure 18). However, the number of individuals falling into this category was so small ( $n = 4$ ) that no analysis was attempted with regard to it. Certainly, these data could be objected to as unrepresentative and useless. For this reason, only the four "domestic" groups were investigated in detail.

The responding professors who were reared in the Midwest distinguished themselves as the most oriented toward positive-descriptive methods. It can be noted from Figure 17 that the mean scores by scale for this group resulted in a "more favorable" pattern of response on the profile indicating this concept than did the mean responses for any other group. Alternatively, Figure 18 reveals that this Midwestern group entertained a "less favorable connotation" of normative methods.

In general, the Eastern and Southern reared professors seemed to be the primary advocates of the normative approach to management. Both value judgment profiles indicate that the mean values by scale for the two groups trace a pattern that penetrates more toward the positive side on the concept relating to normative methods and more toward neutral with

"POSITIVE-DESCRIPTIVE METHODOLOGY"



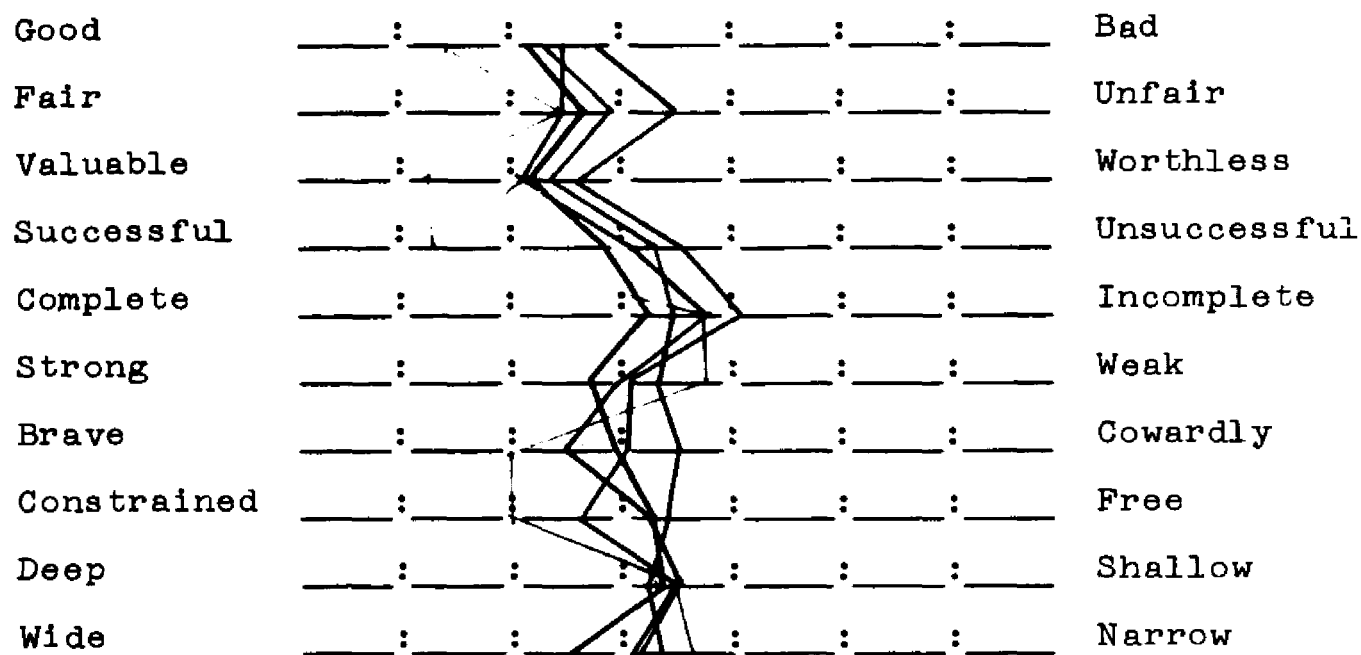
Legend: (By geographical area where respondent was reared)

East —  
 West —  
 Midwest —  
 South —  
 Foreign —

FIGURE 17

VALUE JUDGMENT PROFILE A

"NORMATIVE-PRESCRIPTIVE METHODOLOGY"



Legend: (By geographical area where respondent was reared)

East —  
 West —  
 Midwest —  
 South —  
 Foreign Born —

FIGURE 18

VALUE JUDGMENT PROFILE B

respect to the positive concept.

None of the domestic groups revealed a very active potency dimension as evidenced by the D matrices relating to concepts D and E in Table V. This observation tends to reinforce the previous statement which speculated the existence of a less familiar "cognitive framework" relative to value judgment issues. However, the evaluative D matrices in Table IV support the existence of the alliances uncovered via examination of the visual profiles. For instance, the  $D_E$  values between Eastern and Midwestern reared professors ( $D_E = 1.06$ ) and Midwestern and Southern ( $D_E = 1.09$ ) confirm that the various groups were separated with respect to concept D. Corresponding values,  $D_E = .82$  and  $D_E = 1.23$ , suggest a similar separation relative to concept E.

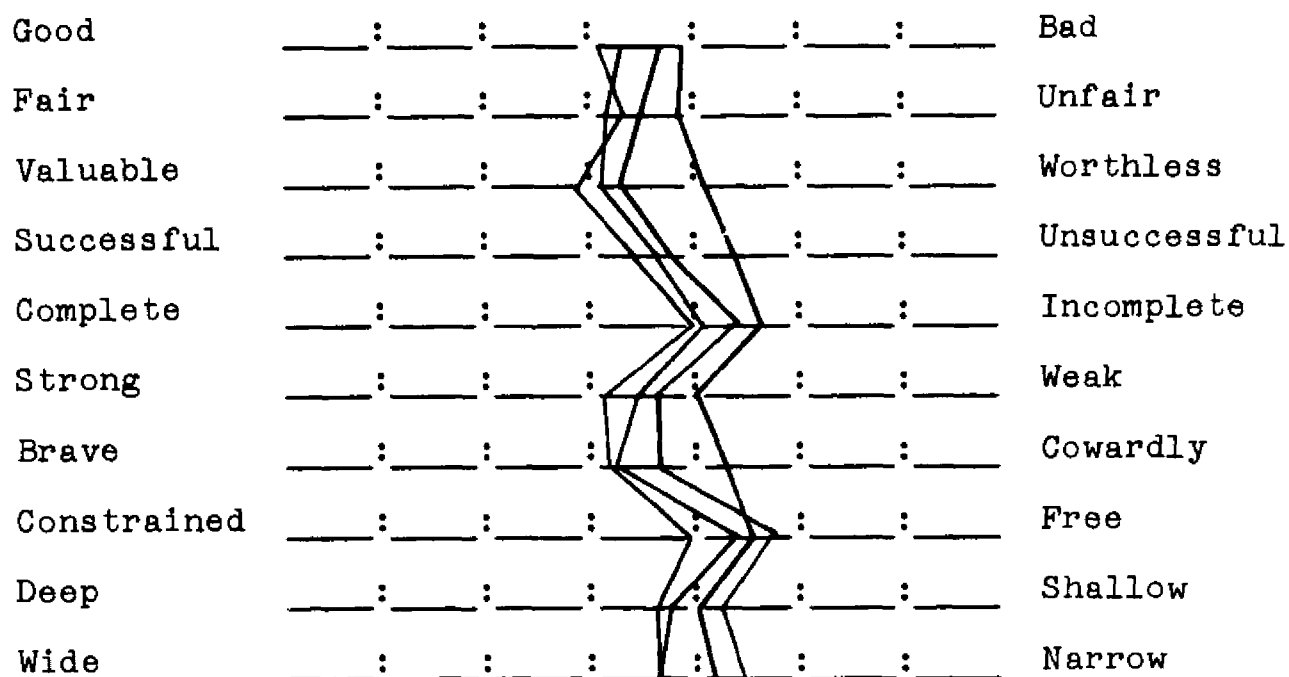
Thus, a rather distinct segmentation appears to have developed. The Midwestern reared respondents supported the idea of positive methodology and exhibited an almost neutral connotation toward the normative approach. The East and South, on the other hand, entertained a somewhat reversed attitude.

Concept F. The final concept, political conservatism, although not directly related to methodology, was included primarily because it was considered useful in the examination of the overall idea of environmental determination. It was found that parent's occupation was the primary determinant

of difference relative to this concept. As illustrated by Figure 19, children of professional parents revealed a more favorable connotation of political conservatism. Group four, labeled "all others" but made up mostly of farmer's children, had the least favorable connotation. Initially, this came as a surprise to the writer until an interesting similarity was noted. Visual analysis showed that blue-collar workers, although entertaining a favorable connotation, were less in favor of conservatism than professional groups. In the end, the blue-collar group was "less" conservative than the professional and white-collar groups. This might indicate, as some convincingly argue, that recent legislative trends have resulted in the support of agriculture and labor groups and resentment from the professional and managerial classes. Certainly, the above results could be interpreted as supporting the existence of such a "class" alienation. However, since this bears no direct relationship to methodological convictions no further observations will be made concerning the subject.

A Brief Digression on Highest Degrees Held. It was mentioned earlier that significant differences in connotative meanings were revealed between holders of masters and doctorate degrees with respect to every concept. In addition, it was further noted that in each case the holders of masters degrees

# "POLITICAL CONSERVATISM"



Legend: (By parent's occupation)

Blue-collar      —  
 White-collar    —  
 Professional    —  
 All Other        —

FIGURE 19  
 POLITICAL PROFILE

took stronger although similar positions to those who possessed doctorates. Because such a general observation could be made with reasonable validity, the minute details required no elaborate presentation. This result, however, will be incorporated in the synthesis and theoretical propositions to be advanced in the following section.

#### A Summary of Opinion and a Theory

One thing the survey of management academia made abundantly clear was the importance of geography in the formation of methodological convictions. Such an observation obviously confirms the minor hypothesis since it suggests that certain factors influence the development of methodological beliefs and others do not. In addition, specific influences such as geographical area of present residence appear to be more important determinants of one opinion than of another. The confirmation of this hypothesis and the prior confirmation of the major one can now be interpreted in light of the implications they carry for the future of management and organizations.

Epistemologically, professors residing in the East, Midwest and West emerged as exclusive empiricists while the Southern professors, although entertaining a more favorable attitude toward empiricism, showed an appreciation of a priori methods. In view of this, there seems to be little doubt that

tomorrow's students of management will continue to be exposed to the "virtues" of empiricism via the self-projection process of today's academia. Therefore, the theory of the future will likely reveal a greater emphasis upon empirical investigation. As a matter of fact, empiricism seemed to be so favorably advocated by all groups that one would expect little epistemological disagreement to develop in the immediate forthcoming years.

Such a parallelism cannot be predicted with respect to the value-centric predicament of management and organizations. The fact that professors reared in the Midwest and those reared in the East and South exhibited opposing preferences relative to the question of value judgments is sufficient reason to forecast that controversy will continue in this area. Such an obvious diversity will require that students of management continue their skeptical surveillance with respect to fact and value. The absence of uniform academic opinion professionally favoring one alternative or the other will encourage intellectual acceptance of research utilizing either or both approaches and insure continued controversy relative to the issue.

In addition, the increased sophistication of the discipline and accelerated interest in general systems theory introduces more opportunities for the injection of subjective judgments. For instance, management and organization theories



are no longer formulated within the framework of a single firm. Instead, they incorporate political and social assumptions which in turn influence the theoretical operations of the private corporation. The result of this increased sophistication is the creation of incremental pressures upon students to critically analyze not only assumed objectives of the firm but political and social ideals as well.

Academia likewise is confronted with increased responsibility to explicitly state which parts of their theoretical labors are based on subjective preferences and which findings are the result of scientific investigation. In all, the methodological future of management and organizations promises to be an interesting period of debate, not so much relative to traditional epistemological controversies, but with respect to the place of judgments of value within its structure.

The data obtained in this survey support the contention that today's management academia takes pride in the progress the discipline has experienced in recent years. In spite of this pride, none appear disillusioned relative to the work that remains to be done. With more and more terminally qualified faculty members entering the field, future theory will likely be scrutinized with increased skepticism. Consequently, acceptance will require greater perfection and longer debate. But this is as it should be in any area aspiring to scientific

status; for where there is controversy there is hope, but where there is only complacency all is lost.

#### A Concluding Comment

Now that the data have been presented and an interpretation offered an ex post facto observation seems in order. No doubt the reader has noticed that the mean responses on the visual profiles exhibited a pronounced tendency toward neutrality. Specifically, many of the mean values were located along various points on the neutral or fourth position between a set of bipolar adjectives.

Several reasons may be advanced to account for this situation. Perhaps the most important factor relates to the nature of the subject under consideration. It is likely that very few of the respondents had any previous experience with the concepts they were asked to judge. An extensive examination of graduate management programs in leading universities revealed that practically none offered structured courses which in any way related to the methodological foundations of the discipline. It is the opinion of the writer that this lack of acquaintance bred uncertainty and uncertainty encouraged the cluster toward neutrality.

In addition, there was evidence that the respondents were somewhat unfamiliar with the semantic differential as a research device. This unfamiliarity was, to some extent, expected

since previous use of the SD has been primarily in the area of psychology. However, it is likely that this factor was considerably less important than the previously mentioned uncertainty.

Therefore, the "neutrality tendency" was definitely a limitation of the analysis and in this sense it was disappointing. But disappointment turned to challenge when it was recognized that uncertainty based on lack of acquaintance indicates promise and potential. Perhaps this study will help to reduce this uncertainty and clear the way for future investigations dealing with methodology of management and organizations.

## EPILOGUE

Speculations on methodology are famous for platitude and prolixity. The barrenness of methodological conclusions is often a fitting complement to the weariness entailed in the process of reaching them.

--R. F. Harrod

Methodologically, management and organization theory occupies a rather strange position. It is concerned with physical processes, yet it is not a physical science. Moreover, it deals with the purposeful action of human beings, yet it is not entirely psychological in nature. For this reason, it is granted the privilege of choice between the best, and unfortunately at times the worst, of both "worlds" of methods.

In spite of this preferred position, the methodology of management and organizations has failed to keep pace with theoretical speculations. As has been the case in the development of many sciences, one is inclined to wonder if perhaps the theoretical development of management is not reaching a limit imposed by contemporary methods. No doubt, many investigations in the area remain nothing more than sophisticated exercises in data collection for want of commonly accepted methods of synthesis.

### The Methodological Problem

Methodology is first of all a problem of philosophy and is, therefore, best handled under the auspices of academia. The action-oriented management practitioner can be depended upon for little assistance in the systematic analysis of this type of problem. Perhaps the feature practitioners find most disturbing is that conclusions rarely result from methodological discussions. Therefore, the academician is often alone in his recognition that conclusions are not prerequisite to increased understanding. However, it is the intention of the writer to confine the present comments to a brief summary of the opinions and research findings offered in the preceding analysis lest this study lend support to the introductory quotation.

### Epistemology

Chapter two dealt with epistemology, or the theory of knowledge. It was argued that the basic problems of all sciences, organizations being no exception, are epistemological in that they deal with the relationship between perceived and objective reality. The writer accepted the position of the epistemological dualists who contend that the mental "filter" of man prevents an identity between an object or event and one's perception of it. Because of this dualistic

character of science, it was noted that the "principles" of general semantics provide a dynamic framework for the analysis of epistemological questions. In short, the acquiring of knowledge is nothing more than a triadic relationship between object→thought→symbol. When a scientist, be he physical or social, observes a phenomenon or creates a theoretical idea, he abstracts at successive stages of analysis on the basis of his unique experiences and beliefs. Because of this the scientific report is similar to all other reports, save for more rigorous checks on accuracy, and can be quite successfully analyzed making use of the tenets of general semantics.

Subclassified under dualism two additional epistemological positions were noted. The first, and most influential in recent years, is known as empiricism and claims that experience is prerequisite to all knowledge. In other words, man may know only what he perceives. The literature of organizations has been dominated by the ramifications of this epistemological perspective. Herzberg and Likert are perhaps the names most often associated with this type of analysis although Ernest Dale was undoubtedly the empirical pioneer in management.

The alternative position was referred to as rationalism and contends that universal and empirically unverifiable

truths exist concerning human behavior. This method is deductive whereas empiricism is fundamentally inductive. Although management and organization theory has produced no extreme a priorists, such as Von Mises and Robbins in economics, it has been subjected to a prioristic influences nonetheless. Perhaps the most influential a priori works are the theories built around Maslow's need hierarchy, especially McGregor's Theory X and Theory Y.

Basically, the deductive and inductive methods are the only valid epistemological processes. However, this does not exclude, in the writer's opinion, the possibility of minor alterations in the processes in an effort to facilitate understanding in specific areas. One such alteration was referred to as Verstehen or man to man understanding, possible only in the social disciplines where both the observer and observee in the social-scientific relationship are human beings. This method provides great promise for the formulation of hypotheses and intuitive explanation of phenomena. The inclusion of Verstehen in the methodology of organizations could provide a more productive utilization of ideal types. Since general semantics exposes the utter impossibility of knowing all there is to know about any event, the delineation of the most important factors and concentration upon them seems worthy of the status of

"second best."

Although epistemology was noted as the most basic of methodological considerations, other problems definitely exist. One such difficulty relates to the proper role of value judgments within the confines of science.

### Normative Versus Positive Theory

It is the opinion of the writer that only aspects concerning "what is" belong within the boundaries of organizational science. Although ideals of "what ought to be" are appropriate topics for philosophers, the subjective nature of the ends and values upon which they rest defy scientific analysis. De qustibus non est disputandum.

Regardless of the contention that the scientist qua scientist is prohibited, by virtue of his position, from advocating proper ends, the scientist qua individual qua human being is not. Thus, the scientist, like anyone else may properly entertain social preferences. It is only when these preferences are disguised and offered under the heading of scientifically established fact that he seriously damages the validity and acceptability of his subject. Insurance against such a mixture of fact and value can be provided only from within the scientific community itself. Through the perpetual examination and challenge of his colleagues the scientist can be encouraged to explicitly specify which



portion of his work constitutes systematically determined fact and which portion is opinion. Neither element should be omitted but the separation must be accomplished if management and organization theory is to significantly progress toward scientific status.

Some view the necessity of the separation of fact and value from the viewpoint of scientific morality. While the writer recognizes this as a most important aspect, another dimension is considered equally important. This dimension deals with the abstract nature of judgments of approval or disapproval. Events and processes are categorized as "good" or "bad" on the basis of dominant characteristics abstracted from the infinite array of qualities which the phenomenon possesses. Because there is no uniformity of intersubjective abstraction, the probability that two individuals will abstract identical characteristics when passing a judgment is infinitesimally small indeed. Therefore, if care is not taken the researcher may cast his subjective values upon students who know little and skeptically inquire even less about the subject being judged.

The influence of teacher on student is a situation common to all communicative relationships and is known as self-projection. This conceptualization postulates that various environmental factors contribute to a greater or lesser extent to the

formation of one's system of beliefs which permeates every aspect of his communication with others. It was with respect to this idea that the empirical portion of this study was undertaken.

### The Empirical Analysis

Fundamentally, the objective of the survey of management professors was to determine the general consensus of academia toward the methodological issues discussed above. Then, making use of the results so developed, a speculation into the future was offered.

### Major Findings

Geographical factors emerged as the most important overall determinant of different connotations with respect to methodological concepts. Factors such as the geographical area where a respondent was reared, received his highest degree, and place of present residence were found to be extremely important. Paradoxically, the most important conclusion derived from the analysis of the differences was the existence of an epistemological similarity. Nearly all the epistemological differences were differences of absolute magnitude not of direction, ergo, contemporary thinking in management and organization theory reveals an astounding propensity toward empiricism.

However, differences relative to the issue of value judgments are sufficient to insure continued controversy. This issue is considered by the writer to be the primary methodological battleground of the future. Only time can tell the victor.

### A Look Into the Crystal Ball

If the results of this analysis truly exhibit the thinking of management academia, the future will likely witness greater emphasis on empiricism. The acceptance of this epistemological alternative will necessitate continued concentration upon quantitative methods and basic research tools as integral parts of management curricula. However, debate will likely be quite acute with respect to the pros and cons of normative versus positive theory. Such a trend will also require greater cooperation between academician and practitioner. The function of the former will be the formulation of hypotheses and the scientific analysis of data. To accomplish this the academician must depend upon the practitioner to supply him with the framework for analysis and the experimental situations in which investigations may be conducted.

Regardless of the somberness with which the methodological picture has been painted, it is unlikely that such difficulties will prove the coup de grace for management and

organization theory. Certainly, any subject area whose academicians are concerned and interested, to the extent evidenced by the magnitude of the response to this particular study, can cope with any problem. In fact, it is with respect to these "impossible" problems that academia provides its most valuable contribution. In any event a student of management cannot help but note the willingness with which encouragement and cooperation were given to him by established individuals in the area. For this consideration, the writer is sincerely grateful.

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## APPENDIX A

LOUISIANA STATE UNIVERSITY  
AND AGRICULTURAL AND MECHANICAL COLLEGE  
BATON ROUGE · LOUISIANA · 70803  
*College of Business Administration*

DEPARTMENT OF MANAGEMENT AND MARKETING

March 25, 1968

Dear Professor:

When you think of the term "methodology," what thoughts come to your mind--"empiricism"? . . . "positivism"? . . . "a priori reasoning"? What do such terms really mean to practicing management professors in their teaching and research?

I am attempting to answer these types of questions in my doctoral dissertation research at Louisiana State University and I need your help. Basically, I am trying to relate certain factors in a professor's environmental background with his convictions on selected methodological issues.

Enclosed is a questionnaire designed to provide data for my research. Will you please take ten minutes of your time to complete this form and return it to me? I can assure you that my analysis of the data will be completely statistical and there will be no attempt to identify any respondent. Also I will gladly share my results with you upon request.

Perhaps, with your help, I will be able to make a positive contribution to the field of management. Your prompt reply will certainly be appreciated.

Sincerely yours,

W. Jack Duncan

WJD:jed  
Enclosure

## INSTRUCTIONS

The purpose of this study is to measure the meaning of certain concepts to various professors. In order to accomplish this objective you are asked to judge these concepts against a series of descriptive scales. Remember that these propositions all deal with the methods used in teaching and/or researching the area of management.

It is important that you mark the scales on the basis of how you think the concepts should relate to management theory and methodology (except concepts one and six). On each page you will find a different concept and beneath it a brief explanation and a set of scales. The scales should be marked as follows:

If you think the concept at the top of the page is very closely related to one end of the scale, place your mark in the following manner:

Good    X : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_    Bad

or

Good    \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : X    Bad

If you think the concept is quite closely related to one end of the scale (but not extremely), mark as follows:

Good    \_\_\_\_ : X : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_    Bad

or

Good    \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : X : \_\_\_\_    Bad

If the concept seems only slightly related to one side (but is not neutral), mark as illustrated below:

Good    \_\_\_\_ : \_\_\_\_ : X : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_    Bad

or

Good    \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : \_\_\_\_ : X : \_\_\_\_ : \_\_\_\_    Bad

The extreme toward which you mark depends upon which extreme seems the most characteristic of the proposition being judged. If you think the concept is neutral with respect to a particular scale or that a given scale is completely irrelevant, place your mark in the middle space.

Good    \_\_\_\_:\_\_\_\_:\_\_\_\_: X :\_\_\_\_:\_\_\_\_:\_\_\_\_    Bad

IMPORTANT:

- (1) Please mark in the center of the space.

This       \_\_\_\_:\_\_\_\_:\_\_\_\_: X :\_\_\_\_:\_\_\_\_:\_\_\_\_

Not this    \_\_\_\_:\_\_\_\_:\_\_\_\_:\_\_\_\_: X \_\_\_\_:\_\_\_\_

- (2) Please mark every scale for every concept--do not omit any.
- (3) Never put more than one mark on a single scale.

None of the concepts will be repeated so please do not look back and forth through the items and do not try to remember how you marked associated items earlier in the questionnaire. Make each item a separate and independent judgment.

You are encouraged to work at a fairly high rate of speed. Do not be puzzled over individual items; it is your first impression that is important. On the other hand, please work carefully so that the true impressions may be revealed.

The concluding page of the questionnaire is designed to obtain some extremely important classification data.

"THE PRESENT STATE OF MANAGEMENT THEORY"

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |

# "EMPIRICISM IN MANAGEMENT THEORY"

Empiricism emphasizes experimentation and the use of inductive reasoning in an effort to draw inferences regarding underlying relationships upon which management theories may be constructed.

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |



"THE A PRIORI IN MANAGEMENT THEORY"

The a priori position states that certain premises and axioms of management are self-evident requiring no empirical testing. Theory in this sense is the logical deduction of theoretical constructs from these self-evident premises.

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |

# "POSITIVE-DESCRIPTIVE METHODOLOGY"

Positive-descriptive methodology refers to the analysis of managerial issues concentrating on "what is" while remaining neutral relative to the value judgments of "what ought to be."

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |

# "NORMATIVE-PRESCRIPTIVE METHODOLOGY"

Normative-prescriptive methods do not remain neutral relative to value judgments but include the criteria of "what ought to be" as an integral part of theoretical formulations.

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |

"POLITICAL CONSERVATISM"

|             |                                    |              |
|-------------|------------------------------------|--------------|
| Bad         | ____:____:____:____:____:____:____ | Good         |
| Unfair      | ____:____:____:____:____:____:____ | Fair         |
| Valuable    | ____:____:____:____:____:____:____ | Worthless    |
| Successful  | ____:____:____:____:____:____:____ | Unsuccessful |
| Complete    | ____:____:____:____:____:____:____ | Incomplete   |
| Strong      | ____:____:____:____:____:____:____ | Weak         |
| Cowardly    | ____:____:____:____:____:____:____ | Brave        |
| Constrained | ____:____:____:____:____:____:____ | Free         |
| Shallow     | ____:____:____:____:____:____:____ | Deep         |
| Wide        | ____:____:____:____:____:____:____ | Narrow       |

## CLASSIFICATION DATA

1. In what type institution do you presently teach?
  - a. Public (State or Municipal) \_\_\_\_\_
  - b. Non-public (Other than Denominational) \_\_\_\_\_
  - c. Denominational \_\_\_\_\_
2. What is your academic rank?
  - a. Instructor \_\_\_\_\_
  - b. Assistant Professor \_\_\_\_\_
  - c. Associate Professor \_\_\_\_\_
  - d. Professor \_\_\_\_\_
3. What is your age? \_\_\_\_\_
4. What is the highest academic degree you hold?
  - a. Bachelors \_\_\_\_\_
  - b. Masters \_\_\_\_\_
  - c. Doctorate \_\_\_\_\_
  - d. Other (Please Specify) \_\_\_\_\_
5. In what year and from what institution did you receive your highest degree? \_\_\_\_\_
6. Approximately how many years have you been employed as a full-time teacher?
  - a. Less than 5 \_\_\_\_\_
  - b. 6-10 \_\_\_\_\_
  - c. 11-20 \_\_\_\_\_
  - d. 21-30 \_\_\_\_\_
  - e. More than 30 \_\_\_\_\_
7. Which of the following most nearly describes your religious preference?
  - a. Catholic \_\_\_\_\_
  - b. Jewish \_\_\_\_\_
  - c. Protestant \_\_\_\_\_
  - d. Other (Please Specify) \_\_\_\_\_
8. In what state were you reared? \_\_\_\_\_
9. Approximately what was the size of the city (or town) in which you were reared?
  - a. Less than 25,000 \_\_\_\_\_
  - b. 25,001-100,000 \_\_\_\_\_
  - c. 100,001-500,000 \_\_\_\_\_
  - d. 500,000-1,000,000 \_\_\_\_\_
  - e. More than 1,000,000 \_\_\_\_\_
10. In which of the following categories would you place your father's (or guardian's) occupation?
  - a. Blue-collar \_\_\_\_\_
  - b. White-collar \_\_\_\_\_
  - c. Professional \_\_\_\_\_
  - d. Other (Please Indicate) \_\_\_\_\_

## APPENDIX B

TABLE VI  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY TYPE OF INSTITUTION AT  
 $\alpha = .05$

Possible Comparisons:

Group 1 - Public

Group 2 - Private

Group 3 - Denominational

Possible Combinations of Two Groups:

$$\binom{m}{x} = 3$$

Groups compared: Public - Private

Degrees of freedom:  $n_1 + n_2 - 2 = 123$

Critical "t" values:  $-1.98 \leq t \leq 1.98$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | 1.15     | .81      | 1.98     | 1.88     | 2.25     | 2.05     | 1.13     | 2.69     | .90      | 1.00      |
| B | 1.31     | .30      | 1.16     | 2.66     | 1.98     | 2.51     | 1.22     | 1.34     | 2.31     | 1.44      |
| C | 1.68     | 1.77     | 2.05     | .88      | .33      | 1.08     | 2.45     | -.25     | -.28     | -.50      |

Note: Public and private school faculties showed no significant difference with respect to concepts D, E and F. In addition, the public - denominational school comparison and private - denominational combination revealed no difference with respect to any of the six concepts.

TABLE VII  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY AGE AT  $\alpha = .05$

Possible Comparisons:

Group 1 - Less than 25 years

Group 2 - 26-40 years

Group 3 - 41-60 years

Group 4 - More than 60 years

Possible Combinations of Two Groups:

$$\binom{m}{x} = 6$$

Groups compared: (Less than 25) - (26-40 years)

Degrees of freedom:  $n_1 + n_2 = 75$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| B | .24      | 1.06     | - .10    | - .81    | - .10    | - .53    | -1.00    | -2.17    | - .34    | -1.50     |
| C | 2.21     | 1.90     | .95      | 1.16     | 1.06     | 1.12     | 2.03     | .89      | .89      | 1.32      |
| D | .49      | .32      | - .05    | - .10    | .40      | .10      | 2.66     | - .24    | - .10    | .95       |
| F | - .86    | - .12    | -1.25    | - .84    | -1.75    | - .24    | - .20    | -2.85    | - .85    | -1.40     |

Groups compared: (26-40 years) - (41-60 years)

Degrees of freedom:  $n_2 + n_3 - 2 = 113$

Critical "t" values:  $-1.98 \leq t \leq 1.98$

|   |       |     |      |     |       |       |      |     |       |       |
|---|-------|-----|------|-----|-------|-------|------|-----|-------|-------|
| B | -1.10 | .15 | 2.00 | .00 | -1.00 | - .44 | 1.98 | .37 | - .71 | - .20 |
|---|-------|-----|------|-----|-------|-------|------|-----|-------|-------|

Groups compared: (Less than 25 years) - (41-60 years)

Degrees of freedom:  $n_1 + n_3 - 2 = 72$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |       |       |       |       |       |       |       |       |       |     |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| F | - .86 | - .20 | - .70 | -1.43 | -2.00 | - .36 | - .03 | -2.99 | - .64 | .80 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|



TABLE VII (continued)

Groups compared: (Less than 25 years) - (Over 60)

Degrees of freedom:  $n_1 + n_4 - 2 = 30$

Critical "t" values:  $-2.02 \leq t \leq 2.02$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| D | - .42    | -1.70    | -1.00    | - .46    | .19      | - .55    | -2.21    | - .33    | -1.16    | -2.02     |

Note: No significant differences were revealed with respect to various group comparisons and concepts. The insignificant differences by group combinations were:

| <u>Groups</u> | <u>Concepts</u>  |
|---------------|------------------|
| 1-2           | A, E             |
| 2-3           | A, C, D, E, F    |
| 1-3           | A, B, C, D, E    |
| 1-4           | A, B, C, E, F    |
| 2-4           | A, B, C, D, E, F |
| 3-4           | A, B, C, D, E, F |

TABLE VIII  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY HIGHEST DEGREE HELD  
AT  $\alpha = .05$

Possible Comparisons:

- Group 1 - Bachelors degrees
- Group 2 - Masters degrees
- Group 3 - Doctorate degrees
- Group 4 - All other degrees

Possible Combinations of Two Groups:

$$\binom{m}{x} = 1 \text{ (only one comparison made)}$$

Groups compared: Masters - Doctorate  
Degrees of freedom:  $n_2 + n_3 - 2 = 143$   
Critical "t" values:  $-1.98 \leq t \leq 1.98$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | 1.42     | 4.23     | 1.28     | 1.78     | 2.23     | 1.98     | 1.58     | .10      | .96      | 1.34      |
| B | 1.75     | 2.01     | .42      | .92      | .52      | .50      | .80      | .93      | .20      | .38       |
| C | 1.56     | 1.11     | .64      | 2.22     | 1.75     | 1.38     | 1.77     | 1.53     | .41      | .63       |
| D | .49      | .30      | 1.11     | .40      | .40      | .50      | 1.99     | .20      | .76      | .20       |
| E | .52      | 2.21     | 1.00     | .20      | .10      | .10      | .43      | .92      | .20      | .20       |
| F | 1.58     | 1.44     | .89      | 1.65     | 1.12     | 2.10     | 2.00     | .20      | .20      | .30       |

Note: Groups one and four were so numerically small that comparisons requiring their participation were not attempted.

TABLE IX  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY GEOGRAPHICAL AREA  
WHERE HIGHEST DEGREE WAS RECEIVED AT  $\alpha = .05$

Possible Comparisons:

- Group 1 - East
- Group 2 - Midwest
- Group 3 - South
- Group 4 - West

Possible Combinations of Two Groups:

$$\binom{m}{x} = 6$$

Groups compared: East - West

Degrees of freedom:  $n_1 + n_4 - 2 = 74$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | .66      | .12      | -1.00    | -.62     | -.34     | -.40     | -2.37    | .72      | -1.12    | -.41      |
| B | -1.27    | -2.12    | -1.00    | -1.69    | -1.50    | -1.68    | -1.09    | -.15     | -2.61    | -.50      |
| C | -.67     | -.77     | 1.32     | 2.37     | 1.61     | .94      | 1.64     | 1.28     | 1.15     | 1.88      |

Groups compared: West - Midwest

Degrees of freedom:  $n_4 + n_2 - 2 = 81$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |       |      |      |      |      |      |      |      |      |     |
|---|-------|------|------|------|------|------|------|------|------|-----|
| A | -2.00 | 1.10 | 2.66 | 1.32 | 1.00 | 1.64 | 2.30 | -.64 | 1.16 | .57 |
|---|-------|------|------|------|------|------|------|------|------|-----|

Groups compared: East - Midwest

Degrees of freedom:  $n_1 + n_2 - 2 = 85$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |      |      |      |       |      |       |      |      |      |      |
|---|------|------|------|-------|------|-------|------|------|------|------|
| B | .93  | 1.82 | .45  | 1.00  | .73  | .94   | .40  | 1.13 | 2.00 | -.20 |
| C | -.38 | .39  | -.65 | -1.76 | 2.00 | -1.08 | -.40 | -.20 | -.29 | -.05 |

TABLE IX (continued)

Groups compared: East - South

Degrees of freedom:  $n_1 - n_3 - 2 = 61$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | -.38     | 1.12     | 1.45     | 1.00     | -.20     | -.43     | 2.05     | -.90     | .03      | -.55      |
| B | .53      | 1.84     | .83      | 1.00     | .18      | .65      | 2.08     | .10      | 1.60     | -.96      |
| E | 1.10     | 1.42     | 1.18     | 1.68     | 1.93     | 1.75     | 2.24     | 2.25     | 1.18     | 2.74      |

Groups compared: West - South

Degrees of freedom:  $n_4 + n_3 - 2 = 57$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |       |      |      |      |       |      |      |
|---|------|------|------|-------|------|------|------|-------|------|------|
| C | -.24 | .45  | 2.75 | 1.24  | .02  | 1.90 | .74  | .15   | .31  | 1.60 |
| D | -.75 | -.64 | -.43 | -2.03 | -.42 | -.30 | -.45 | -1.29 | .71  | .58  |
| E | .71  | .82  | .92  | 1.23  | .56  | 1.82 | 2.63 | 2.21  | 1.87 | 2.85 |

Groups compared: Midwest - South

Degrees of freedom:  $n_2 + n_3 - 2 = 68$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |       |       |      |      |       |       |       |
|---|------|------|------|-------|-------|------|------|-------|-------|-------|
| A | .67  | 2.21 | 2.88 | 1.63  | .31   | .55  | 1.65 | -.76  | -.00  | -1.18 |
| C | -.82 | .64  | .57  | 2.60  | 1.00  | .74  | 2.02 | -.24  | -1.46 | .43   |
| D | .05  | 2.18 | -.20 | -1.09 | -1.46 | .57  | -.35 | -1.88 | -1.30 | .15   |
| E | .65  | 1.60 | 1.08 | 1.06  | 1.17  | 2.20 | 1.28 | 2.00  | .84   | 1.40  |
| F | 2.64 | 1.05 | .98  | .58   | 1.12  | .20  | .20  | .80   | .20   | 1.50  |

Note: The following group combinations showed no significant difference with respect to the concepts listed.

| <u>Groups</u> | <u>Concepts</u> |
|---------------|-----------------|
| 1-2           | A, D, E, F      |
| 2-3           | B               |
| 1-3           | C, D, F         |
| 1-4           | D, E, F         |
| 2-4           | B, C, D, E, F   |
| 3-4           | A, B, F         |

TABLE X  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY TOTAL TEACHING EXPERIENCE  
AT  $\alpha = .05$

Possible Comparisons:

- Group 1 - Less than 5 years
- Group 2 - 6-10 years
- Group 3 - 11-20 years
- Group 4 - 21-30 years
- Group 5 - More than 30 years

Possible Combinations of Two Groups:

$$\binom{m}{x} = 10$$

Groups compared: (Less than 5 years) - (6-10 years)

Degrees of freedom:  $n_1 + n_2 - 2 = 71$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| D | -1.86    | -2.72    | -1.83    | -2.01    | -.91     | -.81     | -.54     | -1.83    | -.52     | -.38      |

Groups compared: (6-10 years) - (11-20 years)

Degrees of freedom:  $n_2 + n_3 - 2 = 77$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |      |      |      |      |      |      |      |      |       |      |
|---|------|------|------|------|------|------|------|------|-------|------|
| A | .41  | 1.29 | .08  | -.05 | -.57 | .70  | .70  | 1.74 | 2.00  | 1.22 |
| B | -.64 | 1.68 | 1.28 | .00  | .44  | .00  | 2.18 | 1.08 | -1.45 | .48  |
| C | 1.62 | .32  | .87  | 1.08 | -.60 | -.69 | .88  | .20  | .36   | 2.17 |

Groups compared: (Less than 5 years) - (21-30 years)

Degrees of freedom:  $n_1 + n_4 - 2 = 59$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |       |      |      |       |       |       |       |       |       |      |
|---|-------|------|------|-------|-------|-------|-------|-------|-------|------|
| A | -1.18 | -.96 | -.00 | -.55  | -1.41 | -1.32 | -1.20 | -1.70 | -2.00 | -.47 |
| F | -1.48 | -.83 | .10  | -1.23 | -.05  | -2.01 | -1.50 | -.20  | -1.00 | 1.29 |

TABLE X (continued)

Groups compared: (Less than 5 years) - (Over 30 years)

Degrees of freedom:  $n_1 + n_5 - 2 = 46$

Critical "t" values:  $-2.02 \leq t \leq 2.02$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | .63      | .81      | .51      | .65      | 2.09     | 1.47     | -.10     | 1.28     | 1.02     | 1.02      |
| B | .77      | -.29     | -1.36    | .31      | 1.50     | 1.20     | -.43     | 2.46     | 2.02     | 1.40      |
| C | 2.21     | 1.58     | 2.20     | 1.51     | -.28     | 2.03     | .56      | 1.16     | 2.15     | 1.25      |

Groups compared: (6-10 years) - (Over 30 years)

Degrees of freedom:  $n_2 + n_5 - 2 = 37$

Critical "t" values:  $-2.02 \leq t \leq 2.02$

|   |       |       |       |      |       |       |       |       |      |      |
|---|-------|-------|-------|------|-------|-------|-------|-------|------|------|
| A | .95   | .52   | .66   | 1.12 | 2.54  | 2.06  | .32   | 1.30  | 1.50 | .48  |
| B | 1.18  | -.83  | -2.16 | -.05 | 2.16  | 1.16  | -.33  | 1.20  | 1.14 | .95  |
| C | 1.23  | 1.58  | 1.24  | 1.12 | .27   | 2.05  | .90   | 1.10  | 2.35 | .83  |
| D | -1.08 | -2.03 | .97   | -.96 | -.63  | -1.13 | -1.15 | -1.10 | -.07 | 1.20 |
| E | 2.18  | -.86  | 2.18  | .05  | -1.20 | .88   | .10   | -.10  | 1.48 | .30  |

Groups compared: (11-20 years) - (Over 30 years)

Degrees of freedom:  $n_3 + n_5 - 2 = 52$

Critical "t" values:  $2.02 \leq t \leq 2.02$

|   |      |      |       |      |      |      |      |      |      |      |
|---|------|------|-------|------|------|------|------|------|------|------|
| A | 1.26 | 1.28 | .58   | .94  | .81  | 2.03 | .73  | 2.10 | 2.03 | 1.20 |
| B | -.86 | .10  | -1.22 | -.30 | 2.19 | 1.04 | 1.00 | 2.00 | 2.86 | 1.20 |
| C | 2.36 | 1.62 | 2.15  | 1.81 | -.10 | 1.92 | 1.32 | 1.12 | 2.08 | .94  |

Groups compared: (21-30 years) - (Over 30 years)

Degrees of freedom:  $n_4 + n_5 - 2 = 25$

Critical "t" values:  $-2.04 \leq t \leq 2.04$

|   |     |     |     |      |      |      |     |      |      |     |
|---|-----|-----|-----|------|------|------|-----|------|------|-----|
| A | .70 | .68 | .93 | 1.03 | 2.17 | 1.73 | .51 | 1.91 | 1.48 | .43 |
|---|-----|-----|-----|------|------|------|-----|------|------|-----|

Note: The following combinations showed no significance with respect to the concepts listed:

| <u>Groups</u> | <u>Concepts</u>  | <u>Groups</u> | <u>Concepts</u>  |
|---------------|------------------|---------------|------------------|
| 1-2           | A, B, C, E, F    | 3-4           | A, B, C, D, E, F |
| 2-3           | D, E, F          | 1-5           | D, E, F          |
| 1-3           | B, C, D, E       | 2-5           | F                |
| 1-4           | A, B, C, D, E, F | 3-5           | D, E, F          |
| 2-4           | A, B, C, D, E, F | 4-5           | B, C, D, E, F    |

TABLE XI  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY RELIGIOUS PREFERENCE  
AT  $\alpha = .05$

Possible Comparisons:  
Group 1 - Catholic  
Group 2 - Jewish  
Group 3 - Protestant  
Group 4 - All Other

Possible Combinations of Two Groups:

$$\binom{m}{x} = 6$$

Groups compared: Catholic - Protestant  
Degrees of freedom:  $n_1 + n_3 - 2 = 119$   
Critical "t" values:  $-1.98 \leq t \leq 1.98$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| E | -.89     | -1.71    | -.71     | -.43     | .00      | -1.57    | -2.26    | -.41     | -1.65    | -.71      |
| F | .71      | .59      | .88      | .08      | 2.50     | .69      | .00      | -1.00    | 1.05     | .20       |

Groups compared: Catholic - All Other  
Degrees of freedom:  $n_1 + n_4 - 2 = 43$   
Critical "t" values:  $-2.02 \leq t \leq 2.02$

|   |       |      |      |      |       |      |       |       |       |      |
|---|-------|------|------|------|-------|------|-------|-------|-------|------|
| F | -1.51 | -.95 | -.84 | -.33 | -1.27 | -.02 | -1.23 | -2.02 | -1.63 | 2.07 |
|---|-------|------|------|------|-------|------|-------|-------|-------|------|

Groups compared: Protestant - All Other  
Degrees of freedom:  $n_3 + n_4 - 2 = 116$   
Critical "t" values:  $-1.98 \leq t \leq 1.98$

|   |       |       |       |       |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A | -1.90 | -3.02 | -.48  | -1.47 | -1.99 | -.87  | -1.74 | -1.29 | -.78  | -1.21 |
| B | -.10  | -.32  | .84   | -2.56 | -.20  | -.86  | .40   | -1.44 | -.55  | -.79  |
| C | -1.17 | -1.89 | -.88  | -2.06 | -.60  | -1.98 | -1.46 | -.79  | -1.22 | -1.45 |
| D | -.63  | -.42  | -.15  | -1.38 | -.84  | -1.53 | -2.29 | -.69  | -1.68 | -1.40 |
| F | -2.79 | -2.18 | -1.65 | -1.38 | -1.90 | -2.32 | -2.55 | -2.84 | -3.25 | -3.26 |

TABLE XI (continued)

Note: Significant differences did not exist between groups in the following categories.

| <u>Groups</u> | <u>Concepts</u>  |
|---------------|------------------|
| 1-2           | A, B, C, D, E, F |
| 2-3           | A, B, C, D, E, F |
| 1-3           | A, B, C, D       |
| 1-4           | A, B, C, D, E    |
| 2-4           | A, B, C, D, E, F |
| 3-4           | E                |



TABLE XII  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY GEOGRAPHICAL AREA  
IN WHICH RESPONDENT WAS REARED AT  $\alpha = .05$

Possible Comparisons:

- Group 1 - East
- Group 2 - Midwest
- Group 3 - South
- Group 4 - West
- Group 5 - Foreign

Possible Combinations of Two Groups:

$$\binom{m}{x} = 10$$

Groups compared: East - West

Degrees of freedom:  $n_1 + n_4 - 2 = 56$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| F | .30      | .44      | .75      | .00      | .63      | 3.21     | 2.08     | 2.65     | .32      | .82       |

Groups compared: West - Midwest

Degrees of freedom:  $n_4 + n_2 - 2 = 74$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |       |       |       |      |       |       |       |       |       |       |
|---|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| B | .03   | .10   | -1.05 | .50  | -.56  | -1.24 | -2.77 | .65   | -1.94 | -1.30 |
| C | -1.50 | -1.46 | .55   | -.74 | -1.10 | -2.37 | -3.09 | -2.15 | -.51  | .34   |

Groups compared: East - Midwest

Degrees of freedom:  $n_1 + n_2 - 2 = 84$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

|   |      |      |       |      |      |      |      |      |      |      |
|---|------|------|-------|------|------|------|------|------|------|------|
| B | .53  | .74  | .28   | 1.29 | 1.32 | 1.32 | 1.42 | 2.03 | 2.30 | .29  |
| D | 1.15 | 1.05 | .82   | 1.29 | 2.11 | .73  | .81  | .52  | 1.23 | 1.21 |
| E | -.61 | 2.03 | -1.00 | -.60 | -.43 | -.06 | -.77 | 1.00 | .30  | .33  |

TABLE XII (continued)

Groups compared: East - South

Degrees of freedom:  $n_1 + n_3 - 2 = 64$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | -.80     | -1.46    | -2.16    | -2.02    | -1.66    | -1.28    | -2.31    | -1.27    | -1.02    | -.61      |
| B | -1.00    | -2.12    | -1.20    | -2.56    | -1.72    | -1.93    | -2.04    | -1.93    | -1.75    | -1.08     |
| C | -.31     | -1.75    | -2.27    | -.81     | .92      | -1.35    | -.78     | -1.09    | -.18     | -1.24     |
| D | -.80     | -.29     | .58      | -.01     | -2.40    | -1.00    | -.63     | .00      | -1.00    | -1.39     |
| E | -.45     | .10      | -.30     | -1.10    | -1.47    | -.68     | -.38     | -.18     | -.73     | -2.01     |

Groups compared: West - South

Degrees of freedom:  $n_4 + n_3 - 2 = 54$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |      |       |      |      |      |      |      |
|---|------|------|------|------|-------|------|------|------|------|------|
| A | .45  | 1.42 | 2.11 | -.82 | -1.89 | .31  | 1.34 | .95  | -.12 | .75  |
| C | 1.02 | 1.79 | 2.60 | 2.40 | .53   | 1.40 | .82  | 1.86 | .66  | 2.41 |
| E | .32  | 1.10 | .31  | 1.68 | 1.42  | 1.08 | 1.47 | .60  | .36  | 2.03 |
| F | .59  | .10  | .20  | .10  | 2.19  | -.84 | -.58 | 1.45 | -.33 | .70  |

Groups compared: Midwest - South

Degrees of freedom:  $n_2 + n_3 - 2 = 82$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |       |      |       |       |      |      |      |      |      |      |
|---|-------|------|-------|-------|------|------|------|------|------|------|
| A | .84   | 2.00 | 2.53  | 2.13  | 2.25 | 1.37 | 2.42 | .42  | .20  | -.28 |
| D | -2.03 | -.75 | -1.50 | -1.19 | .38  | .34  | .00  | -.78 | -.66 | .20  |
| E | 1.08  | .76  | 1.25  | 1.70  | 2.02 | .94  | .33  | -.82 | -.55 | 1.88 |

Groups compared: East - Foreign Reared

Degrees of freedom:  $n_1 + n_5 - 2 = 37$ Critical "t" values:  $-2.02 \leq t \leq 2.02$ 

|   |       |      |      |      |      |      |       |      |      |      |
|---|-------|------|------|------|------|------|-------|------|------|------|
| C | -.93  | -.83 | .50  | 2.12 | .90  | .48  | -1.40 | .68  | -.41 | -.62 |
| E | -1.15 | .00  | 1.62 | 2.94 | -.20 | -.75 | 1.29  | 2.08 | -.26 | -.26 |

TABLE XII (continued)

Groups compared: West - Foreign Reared

Degrees of freedom:  $n_4 + n_5 - 2 = 27$ Critical "t" values:  $-2.06 \leq t \leq 2.06$ 

## Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| C | -.38     | -.58     | .84      | 2.84     | .51      | 1.01     | -1.05    | 1.07     | -.08     | .22       |
| E | .32      | .71      | 1.62     | 2.95     | -.10     | .42      | 2.17     | 2.31     | .12      | -.12      |
| F | -.84     | -1.42    | -2.16    | -.20     | -1.74    | -1.00    | -2.30    | .00      | -1.05    | -.09      |

Groups compared: Midwest - Foreign Reared

Degrees of freedom:  $n_2 + n_5 - 2 = 55$ Critical "t" values:  $-2.02 \leq t \leq 2.02$ 

|   |       |       |      |       |      |      |       |       |       |       |
|---|-------|-------|------|-------|------|------|-------|-------|-------|-------|
| B | 1.18  | -.96  | .80  | 1.36  | -.12 | -.72 | -.10  | -2.59 | -.26  | -1.08 |
| C | -1.56 | -1.55 | -.12 | 2.26  | -.36 | .64  | -2.10 | .05   | 1.36  | -1.10 |
| D | -1.09 | -1.12 | -.09 | -1.21 | -.54 | .69  | -.30  | -3.05 | -1.58 | -.05  |
| E | 1.82  | 1.14  | 2.35 | 3.48  | .12  | -.68 | -.04  | 1.40  | .12   | -.43  |

Groups compared: South - Foreign Reared

Degrees of freedom:  $n_3 + n_5 - 2 = 35$ Critical "t" values:  $-2.04 \leq t \leq 2.04$ 

|   |       |       |       |       |       |       |       |       |      |       |
|---|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|
| B | .69   | -1.58 | .20   | .22   | -.18  | -1.02 | -.28  | 2.33  | .00  | -1.46 |
| E | .89   | .20   | -1.46 | -2.24 | -1.02 | -1.14 | 1.49  | 1.97  | -.17 | -1.34 |
| F | -1.16 | -1.48 | -2.15 | .22   | .15   | .62   | -1.65 | -1.04 | -.85 | -.33  |

Note: The following groups showed no significant difference relative to the concepts listed below.

| <u>Groups</u> | <u>Concepts</u> | <u>Groups</u> | <u>Concepts</u> |
|---------------|-----------------|---------------|-----------------|
| 1-2           | A, C, F         | 3-4           | B, D            |
| 2-3           | B, C, F         | 1-5           | A, B, D, F      |
| 1-3           | F               | 2-5           | A, F            |
| 1-4           | A, B, C, D, E   | 3-5           | A, C, D         |
| 2-4           | A, D, E, F      | 4-5           | A, B, D         |

TABLE XIII

SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY CITY SIZE WHERE  
RESPONDENT WAS REARED AT  $\alpha = .05$

## Possible Comparisons:

- Group 1 - Less than 25,000
- Group 2 - 25,001 - 100,000
- Group 3 - 100,000 - 500,000
- Group 4 - 500,001 - 1,000,000
- Group 5 - Greater than 1,000,000

## Possible Combinations of Two Groups:

$$\binom{m}{x} = 10$$

Groups compared: (Less than 25,000) - (25,001 - 100,000)

Degrees of freedom:  $n_1 + n_2 - 2 = 58$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | 1    | 2    | 3    | 4    | 5    | 6   | 7     | 8    | 9    | 10   |
|---|------|------|------|------|------|-----|-------|------|------|------|
| B | 2.70 | 2.56 | 1.45 | 1.37 | .35  | .35 | 1.27  | 1.13 | .71  | .00  |
| D | .36  | .46  | .50  | .50  | 1.25 | .15 | -2.90 | 1.50 | -.50 | 1.55 |
| E | 1.66 | .50  | 1.60 | .71  | 2.39 | .81 | -.58  | -.24 | -.15 | -.44 |

Groups compared: (25,001 - 100,000) - (100,001 - 500,000)

Degrees of freedom:  $n_2 + n_3 - 2 = 50$ Critical "t" values:  $-2.02 \leq t \leq 2.02$ 

|   |      |      |       |      |      |      |     |      |      |      |
|---|------|------|-------|------|------|------|-----|------|------|------|
| D | 1.50 | .90  | -1.10 | .24  | 1.08 | .00  | .27 | 1.52 | 2.15 | 1.00 |
| E | -.30 | -.35 | 2.08  | 1.18 | .77  | 1.12 | .40 | .08  | 1.36 | -.35 |

Groups compared: (Less than 25,000) - (100,001 - 500,000)

Degrees of freedom:  $n_1 + n_3 - 2 = 84$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |       |       |      |       |       |       |       |       |       |       |
|---|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|
| E | -1.40 | -1.25 | .50  | -1.82 | -2.13 | -2.30 | -.03  | -.25  | -1.64 | .13   |
| F | -.10  | -.24  | 1.56 | .00   | -.72  | -.53  | -2.92 | -1.24 | -1.37 | -1.32 |

TABLE XIII (continued)

Groups compared: (Less than 25,000) - (Greater than 1,000,000)

Degrees of freedom:  $n_1 + n_5 - 2 = 83$

Critical "t" values:  $-2.00 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | -2.02    | -1.98    | -2.44    | -2.33    | -1.54    | -2.15    | -1.28    | -1.06    | -1.29    | - .95     |
| E | - .75    | -2.24    | - .66    | - .35    | -1.40    | -1.97    | .00      | -1.42    | -1.57    | -1.28     |

Groups compared: (25,001 - 100,000) - (Greater than 1,000,000)

Degrees of freedom:  $n_2 + n_5 - 2 = 49$

Critical "t" values:  $-2.02 \leq t \leq 2.02$

|   |       |       |       |       |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| F | -1.77 | -1.45 | -1.77 | - .21 | -1.36 | -1.15 | -1.95 | -2.06 | -1.78 | -1.83 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

Groups compared: (100,001 - 500,000) - (Greater than 1,000,000)

Degrees of freedom:  $n_3 + n_5 - 2 = 45$

Critical "t" values:  $-2.02 \leq t \leq 2.02$

|   |       |       |       |       |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| C | - .62 | -1.34 | -1.52 | -1.60 | - .92 | -1.18 | -2.18 | -2.12 | - .78 | -1.33 |
| F | -1.17 | -1.87 | .42   | - .05 | -1.13 | -2.61 | -1.55 | - .56 | -1.32 | -1.66 |

Note: No significant differences were revealed among the following groups with respect to the concepts listed.

| <u>Groups</u> | <u>Concepts</u>  |
|---------------|------------------|
| 1-2           | A, C, F          |
| 2-3           | A, B, C, F       |
| 1-3           | A, B, C, D       |
| 1-4           | A, B, C, D, E, F |
| 2-4           | A, B, C, D, E, F |
| 3-4           | A, B, C, D, E, F |
| 1-5           | B, C, D, F       |
| 2-5           | A, B, C, D, E    |
| 3-5           | A, B, D, E       |
| 4-5           | A, B, C, D, E, F |

TABLE XIV  
SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY PARENT'S OCCUPATION  
AT  $\alpha = .05$

## Possible Comparisons:

- Group 1 - Blue-collar
- Group 2 - White-collar
- Group 3 - Professional
- Group 4 - All others

## Possible Combinations of Two Groups:

$$\binom{m}{x} = 6$$

Groups compared: Blue-collar - White-collar

Degrees of freedom:  $n_1 + n_2 - 2 = 88$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| F | .20      | .28      | .83      | .54      | 1.62     | .56      | 1.48     | 2.09     | 1.28     | .54       |

Groups compared: White-collar - Professional

Degrees of freedom:  $n_2 + n_3 - 2 = 89$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |       |      |      |      |      |       |      |      |      |
|---|------|-------|------|------|------|------|-------|------|------|------|
| B | 2.35 | 1.00  | 2.41 | 1.60 | .59  | 1.48 | 1.13  | .30  | .30  | .20  |
| F | .12  | -3.55 | -.57 | -.40 | -.62 | -.50 | -2.00 | -.58 | -.13 | -.13 |

Groups compared: Blue-collar - Professional

Degrees of freedom:  $n_1 + n_3 - 2 = 81$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |      |       |       |       |       |       |       |
|---|------|------|------|------|-------|-------|-------|-------|-------|-------|
| F | -.35 | -.55 | -.79 | -.90 | -1.08 | -1.18 | -2.13 | -1.18 | -1.47 | -1.54 |
|---|------|------|------|------|-------|-------|-------|-------|-------|-------|

Groups compared: Blue-collar - Others

Degrees of freedom:  $n_1 + n_4 - 2 = 55$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |       |       |       |      |      |      |      |      |      |      |
|---|-------|-------|-------|------|------|------|------|------|------|------|
| F | -2.02 | -2.02 | -1.08 | -.56 | -.84 | -.30 | -.55 | -.26 | -.95 | -.85 |
|---|-------|-------|-------|------|------|------|------|------|------|------|

TABLE XIV (continued)

Groups compared: White-collar - Others

Degrees of freedom:  $n_2 + n_4 - 2 = 63$

Critical "t" values:  $-2.00^4 \leq t \leq 2.00$

Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| F | -1.32    | -1.47    | -2.43    | -2.11    | -1.57    | -1.26    | -2.12    | - .69    | - .39    | - .53     |

Groups compared: Professional - Others

Degrees of freedom:  $n_3 + n_4 - 2 = 56$

Critical "t" values:  $-2.00^4 \leq t \leq 2.00$

|   |      |      |      |      |      |      |      |     |      |      |
|---|------|------|------|------|------|------|------|-----|------|------|
| F | 1.07 | 2.88 | 2.55 | 1.89 | 1.61 | 2.03 | 2.13 | .75 | 1.29 | 1.51 |
|---|------|------|------|------|------|------|------|-----|------|------|

Note: No significant differences were exposed relative to the following groups and concepts.

| <u>Groups</u> | <u>Concepts</u> |
|---------------|-----------------|
| 1-2           | A, B, C, D, E   |
| 2-3           | A, C, D, E      |
| 1-3           | A, B, C, D, E   |
| 1-4           | A, B, C, D, E   |
| 2-4           | A, B, C, D, E   |
| 3-4           | A, B, C, D, E   |

TABLE XV

SIGNIFICANT DIFFERENCES IN CONNOTATIVE MEANINGS OF  
METHODOLOGICAL CONCEPTS BY PRESENT RESIDENCE  
AT  $\alpha = .05$

## Possible Combinations:

- Group 1 - East
- Group 2 - Midwest
- Group 3 - South
- Group 4 - West

## Possible Combinations of Two Groups:

$$\binom{m}{x} = 6$$

Groups compared: East - West

Degrees of freedom:  $n_1 + n_4 - 2 = 69$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8   | 9    | 10   |
|---|------|------|------|------|------|------|------|-----|------|------|
| B | .99  | 1.35 | .03  | 2.42 | 1.24 | 1.75 | .08  | .66 | 1.27 | .63  |
| C | 1.38 | 2.00 | 1.65 | .47  | .86  | .47  | 1.14 | .74 | 1.49 | .94  |
| D | 1.00 | 1.40 | .00  | 1.00 | 1.01 | .77  | 2.81 | .32 | .00  | .36  |
| E | .33  | .68  | .53  | 1.54 | 2.79 | 1.59 | .63  | .73 | .43  | .47  |
| F | .00  | .00  | 2.25 | .87  | .00  | .87  | 1.21 | .00 | 1.79 | 1.46 |

Groups compared: East - Midwest

Degrees of freedom:  $n_1 + n_2 - 2 = 66$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |      |      |      |     |     |      |      |
|---|------|------|------|------|------|------|-----|-----|------|------|
| B | -.39 | .00  | .00  | 2.11 | 1.83 | 1.16 | .00 | .00 | 1.77 | -.56 |
| C | 1.14 | 2.05 | 1.67 | 1.28 | .00  | .37  | .76 | .46 | .57  | .47  |

Groups compared: Midwest - South

Degrees of freedom:  $n_2 + n_3 - 2 = 77$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|
| A | 2.00 | 2.18 | 2.00 | 1.77 | 1.83 | 2.84 | 2.14 | 1.34 | 1.74 | 1.77 |
| B | .80  | 1.90 | .57  | 1.17 | 1.16 | 2.00 | 3.23 | 2.90 | .80  | 2.70 |
| E | 1.27 | 1.35 | .10  | 1.74 | 2.37 | 2.22 | .46  | .20  | 1.32 | 2.20 |



TABLE XV (continued)

Groups compared: East - South

Degrees of freedom:  $n_1 + n_3 - 2 = 70$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

## Computed Values of "t" by Scales

|   | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> | <u>7</u> | <u>8</u> | <u>9</u> | <u>10</u> |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| A | 1.96     | 1.75     | 2.29     | 2.47     | 2.65     | 2.82     | 3.08     | 1.88     | 1.95     | .80       |
| B | .42      | 1.64     | .39      | -3.29    | 2.83     | 1.53     | 4.69     | 2.26     | 2.23     | 2.38      |
| C | 2.65     | 3.51     | 1.94     | .67      | 2.38     | .88      | .70      | 1.39     | 1.32     | 1.22      |
| D | .41      | -.53     | -.26     | 2.37     | -.06     | .86      | 1.00     | .65      | 1.58     | .82       |
| E | .84      | -.04     | -1.20    | 1.92     | .83      | -1.00    | .73      | .04      | 1.52     | 2.09      |
| F | 1.11     | 1.84     | 1.94     | 2.58     | 2.31     | 1.24     | 2.55     | -2.02    | 3.17     | 2.07      |

Groups compared: West - South

Degrees of freedom:  $n_4 + n_3 - 2 = 77$ Critical "t" values:  $-2.00 \leq t \leq 2.00$ 

|   |      |      |      |      |      |      |      |      |      |      |
|---|------|------|------|------|------|------|------|------|------|------|
| B | .45  | .59  | .40  | 1.81 | 1.87 | 1.44 | 2.66 | 2.07 | 1.56 | 1.56 |
| C | 1.00 | 1.34 | 1.55 | 2.00 | 1.00 | 1.05 | 2.78 | 1.30 | .76  | 1.47 |
| E | .48  | 1.24 | .57  | 1.74 | 2.21 | 2.38 | 2.35 | 1.16 | 2.19 | 1.47 |
| F | .77  | 1.32 | 1.22 | .01  | .04  | 2.08 | 1.64 | 2.01 | 1.28 | .44  |

Note: No significant differences were noted with respect to the following groups and concepts.

| <u>Groups</u> | <u>Concepts</u>  |
|---------------|------------------|
| 1-2           | A, D, E, F       |
| 2-3           | C, D, F          |
| 1-3           | A, B, C, D, E, F |
| 1-4           | A                |
| 2-4           | A, B, C, D, E, F |
| 3-4           | A, B, D          |

## VITA

W. Jack Duncan was born the son of Joseph T. and Evelyn P. Duncan in Birmingham, Alabama on July 5, 1942. He received his primary and secondary education in the public schools of Tarrant, Alabama, a suburb of Birmingham.

In September, 1960 he entered Howard College (now Samford University). His studies were temporarily interrupted in October, 1961 when he was called to active duty with the Alabama Air National Guard and served twelve months in France. While on active duty, he married the former Judith Elsberry of Birmingham.

After obtaining his discharge he returned to Samford University and was granted the Bachelor of Science Degree in Business Administration in May, 1965. He was accepted for graduate study at Louisiana State University and received the Master of Business Administration Degree from that institution in August, 1966.

The following September he continued his graduate studies at Louisiana State University with the aid of a Graduate Teaching Assistantship in the Department of Management and Marketing. In September, 1967 he was granted the Humble Oil and Refining Company Fellowship through the Louisiana State University Foundation and is at the present time a candidate for the Degree of Doctor of Philosophy.

# EXAMINATION AND THESIS REPORT

Candidate: Walter Jackson Duncan

Major Field: Management

Title of Thesis: On the Epistemology and Methodology of Management and Organizations: A General Semantics Approach with an Analysis of Academic Opinion

Approved:

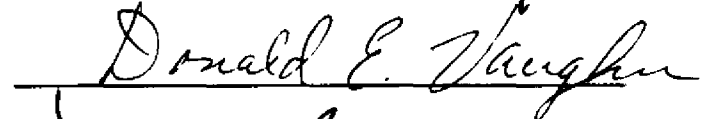


Major Professor and Chairman



Dean of the Graduate School

## EXAMINING COMMITTEE:



Date of Examination:

September 26, 1968